

NAVAL AVIATION

NEWS

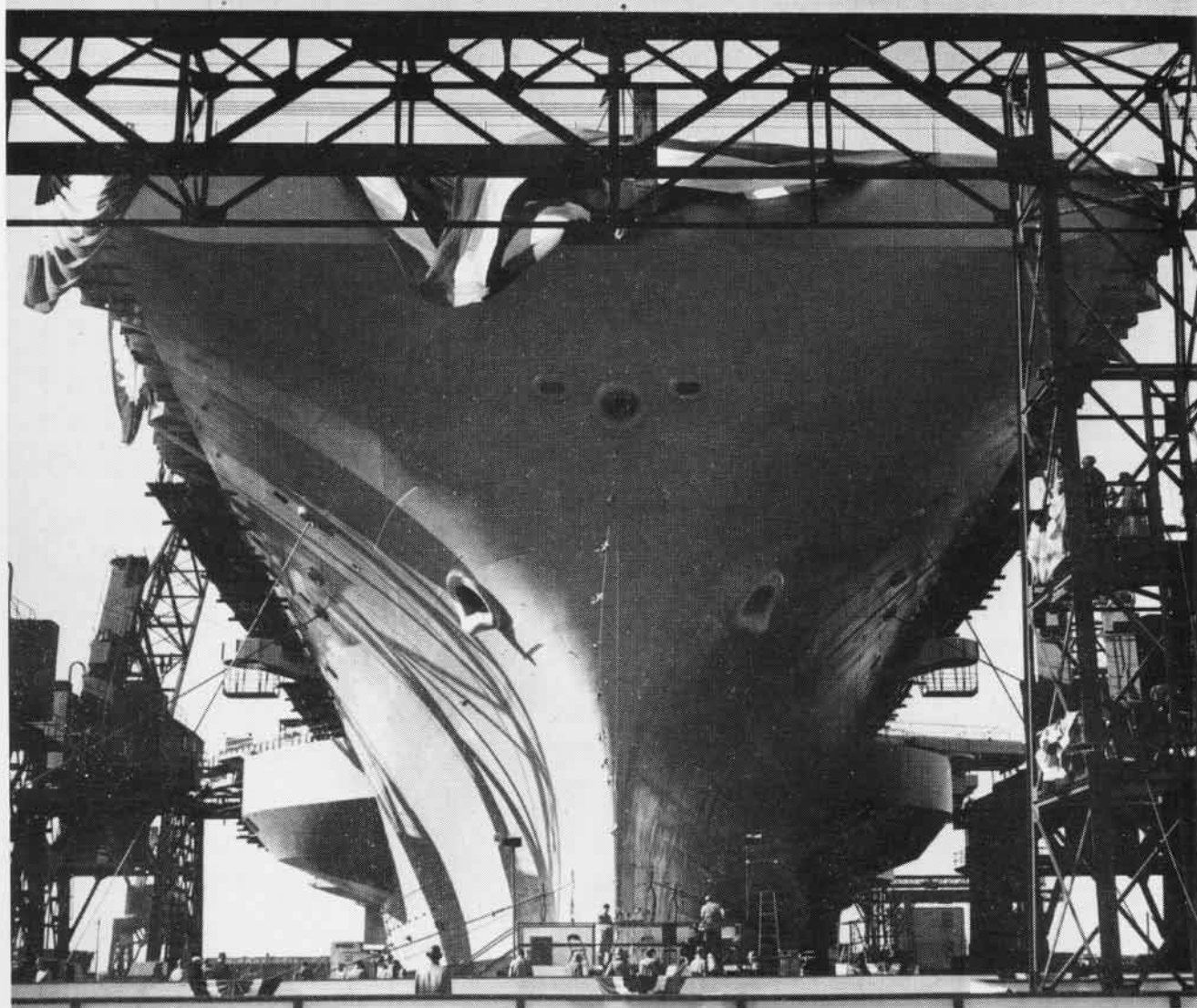


FEBRUARY 1955

NavAer No. 00-75R-3



THE BIG FORRESTAL IS LAUNCHED



JUST as aircraft have evolved from flimsy cloth and wood construction to today's heavy supersonic sky warriors, so have floating airfields progressed from a flat deck superimposed on a collier to a 59,650-ton leviathan. Present ultimate in progress is the Forrestal, christened by Mrs. James V. Forrestal, widow of the first SecDef. With Mrs. Forrestal are: SecDef Charles E. Wilson; SecArmy Robert T. Stevens; Mrs. Byrnes MacDonald, Matron of Honor; Mr. Henry Forrestal, the late Secretary's brother; SecNav Charles S. Thomas; and Mr. William E. Blewett, Jr., President of Newport News Shipbuilding and Drydock Company. Ship was already afloat in dock, moved back 35 feet after the christening, then to outfitting dock.



HELICOPTERS VERSUS SUBMARINES

A VETERAN submarine skipper stood before a large group of officers after a Navy hunter/killer operation in the Far East and demanded, "We must arm our submarines in some manner to neutralize those blasted helicopters." It was evident that the infant of the air/sea team, was coming of age.

But long before helicopters needed any "neutralizing" from submarines, there were years of experimentation and training. Now these were paying off in a really impressive way.

As far back as 23 September 1931, a young lieutenant named Alfred M. Pride was trying his hand at piloting rotary wing air-

craft, the Navy's first autogiro, the Pitcairn XOP-1. On that day he made three landings aboard the USS *Langley*. Capt. Kenneth Whiting, for whom Whiting Field was later named, was a passenger in the new bird.

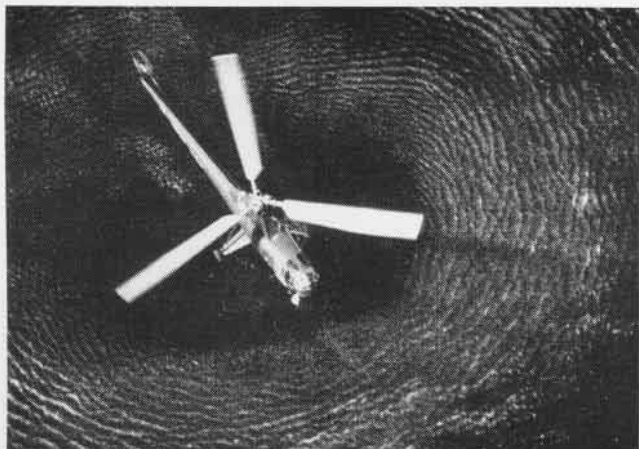
Twenty-three years later, helicopters would be a big part of the ASW picture. Above, they frame the USS *Princeton* (CVS-37) as they play their role in anti-submarine warfare exercises.

Certainly the rotary-winged warrior is far from letter-perfect in the new role, but it is probably safe to say that it is a rising and dramatic star.

Recent exercises indicate that the promise is not a vain one.



LT. PRIDE LANDS AUTOGIRO ON LANGLEY



HOVERING over one section of a search area, the versatile helicopter can sit and listen with dipping sonar gear for an enemy submarine.

EXPERIMENT and research with a view to grooming the helicopter as a hunter/killer are based upon the realization that the helicopter is no longer a novelty. In recent years, it has become a necessity. In the Korean conflict, its possibilities were explored in terms of rescue, reconnaissance, liaison, and transport. The Marines moved an entire battalion by helicopter. It became increasingly clear that the helicopter could go places and do things in a way that conventional aircraft could not.

The first Navy helicopter squadron was formed on 1 July 1946 for experiment and evaluation. Two years later, HU-1 was put in operation. In the early days, there were few naval aviators interested in learning to fly rotary-wing craft, but as the helicopter started proving its capabilities, the rush was on. The Chief of Naval Operations formed several helicopter squadrons, including anti-submarine squadrons, and with the cooperation of ComAirPac and ComAirLant, the ASW program made progress.

Representative of the ASW helicopter squadrons is Helicopter Anti-Submarine Squadron Four (HS-4) of the Pacific Fleet. Originally commissioned on 30 June 1952 at Alameda Field near San Diego, HS-4 has grown from 10 officers and a handful of untrained men with one SNJ to a highly trained group of 52 officers, 233 men and an appropriate allowance of helicopters.

When HS-4 was formed, there were no experienced people with "the word" in this squadron. The pilots, crews, and maintenance personnel had to learn by trial and error. Nonetheless several officers and men of HS-4 won commendations for their part in the development of the configuration of the HRS-HO4S helicopter.

The helicopters now used for ASW work were designed and built as transports for the Army and the Marine Corps. Initially, a few HRS Marine vehicles were borrowed by the Navy in order to try them out in the ASW program, and most of the changes that had to be made were initiated by squadron personnel. In turn, these changes have been incorporated by the manufacturers in helicopters designed specifically for ASW work.

Recent successes of HS-4 crews and crews of other ASW helicopter squadrons have confirmed the importance of the helicopter in anti-submarine warfare. Consider the special advantages of the helicopter. It can hover motionless over

the surface of the water and move quickly from one point to another. Add to the helicopter sub-surface detection equipment, namely dipping sonar, and it is ready for action.

A comparison of the helicopter and the destroyer—both now carry similar items of detection gear—points to certain advantages of the helicopter. The dipped sonar transducer lies motionless in the water and is therefore not subject to the disturbing effect produced by the rush of water past the sonar transducer of a destroyer moving rapidly through the water. Its detection potential is therefore considerably enhanced.

The dipped sonar can be transported at will and at many times the speed of the destroyer sonar over large areas. Finally, and perhaps most important of all, the helicopter is now invulnerable to sub-surface attack and need not



DIPPING sonar gear in play, this Piasecki HUP-2 hovers, just a few feet above surface of the water, pinging and listening.

exercise caution in its approach to a known contact area.

There are other advantages which the sonar-equipped helicopter possesses over surface-borne sonar and, needless to say, there are some deficiencies. However, these three outstanding advantages are most important, and it is on them that present operational employment of helicopters in anti-submarine tactics is based.

This is not to say that the helicopter can replace the destroyer in present day anti-submarine operations. Actually combining the two has proved highly successful. Capitalizing upon the three basic superior capabilities of the helicopter and adding to them the staying power of the destroyer, a sizable stinger has been developed for our anti-submarine forces and the probability of obtaining a kill on the modern submarine is increased.

At the present time, ASW squadrons are using the Sikorsky HO4S-3 helicopter which carries a crew of two pilots and one sonar operator. Teams of from two to 15 helicopters are used from the decks of the CVE, CVS or from special landing platforms on much smaller vessels.

Since in this day of rapid technological development, our coasts are endangered by enemy submarines capable of launching guided missiles, the use of carrier-based ASW helicopters for defense is foreseeable. Held in a ready condition at all times, it is possible for a team of helicopters to be off the deck within seconds of a possible contact.

IMAGINE for a moment the scene aboard a carrier which is part of an anti-submarine force. Helicopter pilots and sonar operators will have had their briefing in the ready room. Awaiting them on the flight deck are several anti-submarine equipped and configured helicopters. On the hangar deck, additional whirlybirds are ready.

At the familiar signal of "Pilots, man your planes," the pilots and sonar operators move to the flight deck and climb aboard their aircraft.

At the bull horn's command, "Start engines," all helicopters spring to life amid puffs of exhaust smoke.

While the engines are warming up, pilots and sonar operators go through normal preflight procedures. At the new command, "Engage rotors," the giant rotor blades of the helicopters begin to turn and accelerate. The green flag goes up, and the helicopters are launched.

Several launching methods are used, and it is interesting to note that experiments have shown that seven helicopters can be launched in 35 seconds. If nine helicopters are used, two being brought from the hangar deck, three minutes, 30 seconds, are required.

Recovery rate is equally remarkable: for seven planes one minute, 10 seconds; for nine, five minutes. This latter time is predicated upon the fact that two of the helicopters must be struck to the hangar deck before the last two can be retrieved. These figures are based, by the way, upon early Key West operation where the old workhorse, the *Piasecki HRP-1*, was employed.

Commenting on this swiftness of maneuver, Capt. H. E. Sears, then commanding officer of the *USS Siboney (CVE-105)* in the experimental operations at Key West, said, "The ease



SINGLE ROTOR *HO4S-1*, especially built as anti-submarine helicopter, carries its own lightweight homing weapons for sub destruction.

with which helicopters may be launched and landed precludes the necessity for the carrier being off course for any appreciable length of time, a most desirable feature when operating with a convoy or when operating independently with screening vessels in hunter/killer operations."

During the last year, *HO4S-1* participated in an impressive number of hunter/killer exercises with other units of the Fleet. During these exercises the *HO4S-1* helicopters have proved, according to the submariners and the tactical commanders alike, as effective as their fixed-wing or destroyer counterparts. Even when the helicopters failed to make a contact during certain phases of the operation, their presence in the area forced the submariners to change their tactics and often to lie dead in the water or run away to avoid detection. When the submarine is held down or forced to leave the area, the task force or convoy is then free to proceed unmolested on its way.

In a screening mission, helicopters are vectored to their respective hover positions in the screen. If there are enough of them available, they may constitute an independent helicopter screen. If there are only a few, they can be used as an adjunct of the destroyer screen. Vectoring the helicopters into the screen as well as subsequent control of them during their series of dipping cycles is done either by surface vessels or by the helicopter pilots navigating themselves.

After they are in position, the helicopters conduct a running series of hovers. As they complete a sonar dip at each point, the 'copters advance along a base course to the next hover. The distance between hovers is based upon the range capability of the sonar for existing conditions.

The time in hover is predicated upon the speed of advance of the screened unit as well as existing sea conditions. In the screen missions, the helicopters remain on station until relieved. If a contact is made on a submarine attempting to penetrate for an attack, the helicopter with the contact holds on to it. The hole in the screen will be plugged by a sonar-equipped helicopter from the carrier.

Back on the carrier, there are one or more 'copters armed with homing weapons. They are kept in Condition One. Upon receipt of contact, the killer helicopters are instantly launched and vectored to the area. They are then guided by the helicopter with contact into the attack position. (If the attack helicopter can carry sonar and weapons, it could, if necessary, vector itself into position.) Meanwhile the Surface Attack Unit is coming in. If no friendly homing weapons



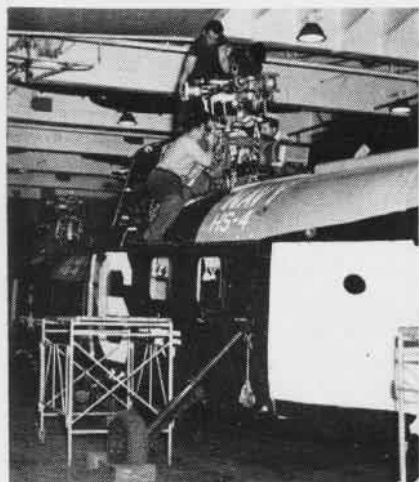
FOUR HO4S-1 helicopters sit with folded rotors on the bow of flight deck of the *USS Rendova* during Far East anti-submarine exercise.

are active in the contact area, the SAU immediately enters the contact area, the contact is passed to the SAU, and the SAU delivers the *coup de grace*.

Consider the second mission of the anti-submarine helicopter, the hunter/killer phase. In most instances in this type of operation, a fixed-wing aircraft or a blimp will establish initial contact at some point fairly remote from the task group or convoy. For example a P-3 makes radar contact followed by an attack on a submarine. It works over the point and establishes a datum.

Upon receipt of contact information aboard the carrier, two or more H/K helicopters are launched; at least two with sonar equipment and one with weapons. On arrival at the datum, sonar search is conducted. The probability of gaining contact is high.

Then with the contact sure, the helicopter uses the anti-submarine weapons it carries. And another submarine discovers the sentinel is fully and most destructively armed.



MAINTENANCE is a never-ending task for the helicopters of HS-4. Men check rotor assembly.



COMPLETION of a Far East exercise aboard the escort carrier USS Rendova finds HS-4 crewmen preparing an HO4S Sikorsky helicopter for stowage below deck. 'Copter carries three men in hunt.

Ideas and configurations are being developed by manufacturers, and new higher-powered helicopters with new sonar gear specifically designed to do anti-submarine work will be coming off the assembly lines in the near future. But even with the planes and gear now available, the helicopter is a highly effective cog in the hunter/killer groups used by the Navy.

One submariner has said, "What really hurts us is that the helicopters make more contacts by chance than other type ASW ships and planes do on purpose." In many cases, several helicopters dipping as a team and covering several miles of ocean in short periods of time will re-establish contact with a submarine that would have been entirely safe in the days before the helicopter.

It is also clear that the helicopters of the ASW squadrons are never just a load on the deck when not flying ASW missions. They are used for many important missions. In fact, the uses of the helicopter are becoming legend. The helicopter has picked up many a fixed-wing pilot from icy water after a crash. It has been a lifesaver to the wounded who have been flown from the front.

The whirling-bladed bird is also highly effective as a mine spotter, gunfire spotter, transport and mail carrier.

When the helicopter first entered the anti-submarine field, the wary submariners took a good long look and stated that the helicopter was nothing more than a "nuisance." Some time later as the pilots and crews learned their job, the submariners took another look and said the helicopter was a "menace."

Then in July and August of last year after a hunter/killer operation off the West Coast, the commander of a submarine group stood up in a meeting of all tactical commanders and stated that the helicopter was now definitely considered a "hazard."

But there are limitations and it is necessary to face them. The helicopter is still a "fair weather bird." It cannot successfully or safely perform its mission at night or under instrument conditions. This well-known weakness of the helicopter is due largely to the fact that almost all helicopters in service today are unstable in hover and, when compared to fixed-wing aircraft, relatively unstable in forward flight.

This limitation—and it is all-important in the efficient accomplishment of round-the-clock anti-submarine operations—prevents the anti-submarine helicopter from attaining full partnership on the sub hunting team.

The helicopter anti-submarine mission is difficult to accomplish, and it may even be extremely hazardous. There is no other aircraft in service today which is called upon to fly at night and under instrument conditions continuously at an altitude of 100 to 50 feet or less, and remain motionless over a spot, at an altitude of approximately 15 to 20 feet. Yet this is precisely what the anti-submarine helicopter must do if it is to be considered an efficient round-the-clock vehicle.

What is left to be done? We will have an ASW helicopter capable of operating on a "round the clock" basis as far as instrument flight is concerned, but one important factor remains. We have a machine which can dip sonar under IFR conditions, but it lacks an instrument which can tell the pilot where to dip and where to fly between dips. In other words, the helicopter pilot requires information which will enable him to navigate his craft from one point to another.

A basic principle of air navigation is that the slower the speed through the air, the greater is the effect of drift. The helicopter, in comparison to fixed-wing aircraft, is a slow

moving vehicle, and consequently, will have a much larger drift angle to compute. In addition, the ASW mission requires frequent speed change, from forward flight to a hover, and vice versa, which makes pin-point navigation exceedingly difficult.

BUAER has fully realized this problem from its inception, and considerable effort has been expended toward the development of navigational equipment specifically for use in ASW helicopter operations.

The goal toward which we are aiming and which we expect to reach in the near future can be stated in these terms: the anti-submarine helicopter will be equipped so that it will be able to fly in any weather conditions in which it is safe and possible to launch and retrieve it from the parent vessel.

In screen work the helicopter's good detection capability has been shown, but here the problems of accurate control tend to make the use of a full helicopter screen somewhat

Considerable progress has been made toward increased stability, both inherent and induced. Coupled with the achievement of stability, the newly designed ASW instrumentation will go far toward surmounting the difficulties encountered in detecting, attacking and destroying undersea craft. Further research and experimentation will undoubtedly overcome completely the remaining problems.

WORD is coming in regularly as to the effectiveness of helicopter participation in anti-submarine exercises. For example—in a report of 1953 Hunter/Killer exercises, ComCarDiv 17 describes succinctly helicopter success: 21 missions, 21 contacts.

The commanding officer of the USS *Sicily* says: "Helicopters proved practicable from a carrier engaged in H/K operations."

From the standpoint of the "enemy," Commander Submarine Division 53 says, "The helicopter is like a leech that



AN EARLY model of Bell's HSL anti-submarine helicopter is prepared for a test flight at the company's Fort Worth assembly plant.



PLANE Number 14 of HS-4 performs task as guard—just one of its various roles—during launching of fixed wing aircraft from *Rendova*.

impractical. As an adjunct to a destroyer screen, use of one or two helicopters assisted in their maneuvering by a nearby screen destroyer, the helicopter has shown itself to be a valuable vehicle in many respects.

Today the Navy helicopter anti-submarine squadrons are equipped with the HO4S-3 helicopter, a dipping sonar platform. At the present time, BUAER has under development helicopters specifically designed for employment in anti-submarine operations which will exhibit flight characteristics superior to those of the HO4S-3.

In addition to improved stability, for this is what we mean when we talk of improved flight characteristics, special instrumentation is under development for these aircraft which will permit accomplishment of the all-weather anti-submarine mission. To be more specific, these new instruments will yield certain data required for hovering and forward flight under IFR conditions, as well as the transitional phases.

The problem of stability in rotary-wing type aircraft has long been the object of study by manufacturers, the military, and commercial users, but the special requirements of the helicopter ASW mission tend to further complicate safety of flight on instruments and must be effectively met.

clings with complete disregard to all efforts of the submarine to break contact."

Summing up the evidence for the helicopter, ComCarDiv 17 states that helicopters appear to have a tremendous potential in:

- Reducing time lag to datum.
- Positively identifying the contact.
- Tenacity in holding contact.
- Ability to regain contact with speed.

It would therefore appear that operational tests point to the ultimately successful employment of a helicopter geared to full partnership in the anti-submarine team. It will take time, but the submarines will face a formidable opponent that can find them, attack them and hold on to them until the underwater prey is knocked out of the fight.

Yes, the newcomer of the air/sea team is coming of age. If still, at times, a slightly uncertain warrior, the helicopter has passed its prelims and is ready for a main event. Spectators will watch that performance with great interest.

Cdr. John A. H. Torry, USN
Lt. E. W. Bradford, USN



GRAMPAW PETTIBONE

The Margin for Error

An SNB-5P departed a local air station at 1105 on a scheduled photographic mission. Owing to the configuration of the aircraft, only the two main tanks carried fuel. The pilot, a lieutenant commander with over 13,000 hours flight experience (200 in type), was aware of this and planned his flight accordingly. After photo run at 300-400 feet for about one and a half hours, the pilot decided to climb to 10,000 feet and take pictures of the air station. Upon reaching 10,000 feet, we take up his statement:

"Flew around about 40 minutes burning right tank down to one-tenth. Had between two and three-tenths in left tank for letdown. Commenced letdown and entered traffic circle at 1500 feet—stayed in traffic circle at all times. Was entering final at 500 feet when had complete engine failure. Was flying on left main tank which showed two-tenths full. Gear and flaps down, props in full forward position and holding 27" manifold pressure.

"Had co-pilot hit wobble pump—got about two revolutions out of engines and then stopped. Lifted landing gear—depressed nose to build up flight speed and headed for open water. Gave emergency call over radio. Told passengers to tighten belts and took plane in for water landing. Pulled master engine switch just before hitting water. Plane landed in water with slight jar and came to stop. No injuries, all crew members acted with coolness and obeyed all orders. Time about 1345.

"What can be done to prevent this



type of accident? (1) Have closer check on fuel gages and have correction chart in plane attached to panel over fuel gages. (2) Have pilots mark on trouble sheets when gages are not functioning properly. These gages are just as important as pressure, suction, or any other instrument. (3) In refueling this type aircraft a shield should be put over the gas nozzle or inserted in tank to make it impossible for gas-sing crew to injure gages with end on nozzle while fueling the aircraft."



Grampaw Pettibone Says:

Now let's just hold on a minute, Bub! I've heard some pretty good ones in my time, but this one really takes the cake. Trying to pin the blame on that poor fuel gage will get you just about as far as a wooden nickel would on the subway from King's Highway to Coney Island. It just ain't being done these days.

There is a little matter of starting a letdown from 10,000 feet with the left tank indicating approximately .25, which cannot be laid to the fuel gage even though the actual amount remaining was one-tenth less. A normal letdown from 10,000 feet to landing would take at least 10 gallons of fuel. This would have left one-tenth remaining in the tank, certainly not enough for such contingencies as fuel gage error, wave-offs, or holding in traffic pattern due to heavy traffic. Even if you had switched to the right tank at the first sign of a pressure drop,

there was no margin for error in case of a wave-off. I can see your statement now in such a case:

"Pressure dropped, switched with dexterity to starboard tank. Not a blurb. Hit the final in good shape. Tower gave wave-off. Some dope had nosed up in middle of runway. Crash trucks all over the place. Took wave-off upwind end of runway, engines quit. Don't know why. Tanks read empty, but they never read right anyway. Made it the last six times. Nosed over to stretch glide. Kept cool. Passengers cool too. In fact frozen stiff. No place to land. Railroad yards below, supply buildings up ahead. No choice. Hit side of large building. Time approximately 1350. What can be done to prevent this type of accident. (1) Move all airfields out on the prairie. (2) Don't allow wave-offs when you're in good shape. (3) Don't allow pilots to fly who aren't cool."

We are all mighty thankful that you



Our Hero

did a good job of ditching in shallow water and no one got hurt. A little of that headwork a half hour sooner would have saved an airplane. You are looking for trouble when you don't allow yourself enough fuel to take a few wave-offs and still get on deck safely.

The margin for error is the margin you still have when you get on deck, not one that you use up before entering the traffic circle. A fella said once, "Squeezing the margin for error is like squeezing a grapefruit. If you squeeze it too hard you get it.....right in the eye."

MEMO FROM GRAMP:

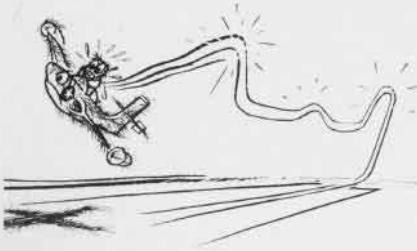
An airplane is like a woman. Let it get the upper hand, and you'll find yourself in a situation that may affect your entire future, not to mention the present.



Batten the Breeze

An F2H-2 pilot signed off the "yellow sheet" and departed the line shack for his aircraft. From here on we'll let the pilot tell it.

"On making a pre-flight inspection of the plane I taxied out to the duty runway for take-off. After I started rolling on take-off, I noticed a strong tendency for the nose to lift off the deck about 80 knots. Thinking it was too much nose-up trim that was causing my trouble, I immediately started using the trim tabs. It wasn't long before I



was airborne with both hands on the stick pushing forward with every ounce of strength that I had. It was then that I realized that something was radically wrong.

"The plane was in about a 60° nose high attitude, and the air speed indicator showed 110 knots. In desperation to get the nose below the horizon, I put the plane in a steep turn. I succeeded in getting the nose down, but upon leveling the wings, the nose pitched up violently again. Holding an airspeed of 100 knots all the way around and unable to climb or obtain a more comfortable air speed without losing control completely, I tried to get in position to make the runway.

"On three occasions I thought I was going in when the plane started to settle badly. By adding power, the plane stopped settling, but the nose would start pitching upward. I tried to make the runway but overshot due to the limited amount of bank that could be used without stalling.

"On trying to turn back the plane stalled and settled in about 200 yards short of the runway and slid about 100 yards before stopping. I vacated the cockpit in a hurry and ran about 50 yards where I was picked up by one of our linemen in a jeep.

"Upon learning that the cause of having no elevator control was an elevator batten, I was dumbfounded as I have never seen or heard of the use of

elevator battens in this squadron. (The battens could be seen much easier on the pre-flight if a red streamer were attached to attract the pilot's notice)."



Gram paw Pettibone Says:

Great Jumpin' Jehosaphat! Talk about a hairy experience!! This lad could almost qualify for first money at the Calgary Stampede. That is, providing he made sure the cinch was tight enough so the saddle wouldn't slip.

What gets me is how in blazes he could miss the batten in the first place. A pilot who thinks anything of his life, not to mention his aircraft, is certainly going to walk completely around his plane checking the control surfaces, landing gear, brake discs, oleos, etc., before he gets into it. He will make sure there are no wrinkles in the fuselage or other signs of overstress.

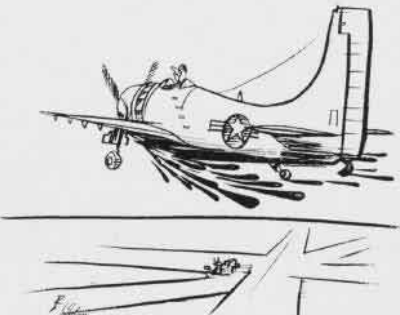
This is not just common sense, it's mandatory. When he gets in the cockpit, one item on the check-off list is to check the controls for full throw. Another item is to set tabs for normal take-off. If this is all done properly and the plane still acts up during the take-off run, he'll abort the take-off.

Son, I'm afraid you asked for this one. You don't just HAPPEN to overlook something as dangerous to flight as a batten even if it comes as a surprise that battens are being used. You overlook it because you have developed some bad flying habits. That's why check-off lists are put in airplanes, to keep pilots from doing things from memory. As you well know by now, memory can be mighty faulty at times.

Well, I can say one thing for you. You did a whale of a job turning an impossible situation into an improbable one. Your grandchildren just ain't gonna believe it.

Git Her Down!

An AD-2 pilot experienced a loss of power prior to a dive bombing run and noticed that his oil temperature was high. As he was only eight miles north of the field and at an altitude of 12,500 feet, he thought he had better make a bee-line for home. The oil pressure



dropped slightly, and the engine started to run a little rough. By throttling back to 17 inches of manifold pressure, he was able to smooth out the engine.

The pilot called the tower and requested an emergency landing on Runway 6. He was cleared, but upon reaching the field, he found he still had 4,000 feet of altitude so he thought he would try for runway 28. At the 180 position on runway 28, the engine froze and the pilot found himself short on power, altitude, and runway. He stalled into a ravine trying to stretch his glide and the aircraft burst into flames on contact with the ground.

The pilot luckily managed to escape before the aircraft was completely demolished. He sustained B injuries.



Gram paw Pettibone Says:

Well, if that doesn't take the rag off the bush! This lad made one big mistake and it almost proved fatal. Rather than trying for the closest runway with a dead stick approach, using what little power he had for a possible undershoot, he tried to bring it around to the duty runway. It's my guess he wouldn't let himself believe he was having an emergency.

Just because that old fan is still ticking over doesn't mean you can take your time, especially when the oil gage starts to fluctuate. When the oil pressure starts down you are not GOING to have an emergency, you are HAVING one and the idea is to see which hits bottom first, the oil pressure or the airplane.

If the handwriting on the wall says "Git her down!", my advice, Bub, is to git her down. The only thing you can stretch in this flying racket and get away with is a sea story.

MEMO FROM GRAMP:

Close ones are only good when playing horseshoes or pitching pennies.

USS YV-2, LITTLE SHIP WITH A BIG MISSION



ENGINE tuning by Hulighan, Miller and Jones keeps the drones flying. After recovery, the engine must be cleaned of salt water immediately.



GROSS, AM2, readies the 'bird' for its 200 mph flight. Chute is packed, engine tuned and radio receiver tested before the target drone flies.



A CATAPULT shot on the YV-2 resembles that from an attack carrier but missions of the two ships are different. USS YV-2 trains Fleet gunners.

FORMER CREW members and Marines who rode the ELSM-446 during WW II would certainly be surprised if they could see her now. Even old Navy salts scratch their chins and ponder, "What in blazes is that?"

Manned by a crew of four officers and 40 enlisted men, plus a 10-man team from VC-6, the small ship is fully equipped to launch, direct, recover, and service drones—the drones used by other ships for Fleet target practice. Where her 40-mm cannon used to be, two catapults have been installed for launchings.

YV-2 is captained by Lt. D. Weidemeyer. Her decks have been cleared and extended into a flight deck.

She is a busy little thing, running from NAS NORFOLK to a point about 60 miles out into the Atlantic to meet the big ships. She has only one counterpart in the Navy, and that is her sister ship, USS YV-1 attached to the Pacific Fleet. USS YV-2 is the Atlantic Fleet's only drone launcher.



SHARP eyes of Lewis, AM2, and Redden, ADC, keep drone in sight as Ltjg. Bridger maneuvers.



CREW members of YV-2 take it easy on deck awaiting orders to get under way for practice.



WHILE the USS Erwin moves into position to fire on drones, crews stand by to launch.

HTU-1 Celebrates Birthday

Training Unit Has 96,000 Hours

The Navy's only helicopter training unit, HTU-1, celebrated its fourth birthday in December with a buffet dinner and dance at their home base, ALF ELLYSON FIELD.

In four years, the helicopter allowance for HTU-1 has increased from seven to 50. Piloting these craft, students fly about 60 hours to qualify in helicopters.

Approximately 96,000 hours have been flown and nearly 2,000 students have received their helicopter designations since the unit was commissioned.

The unit gained local fame last summer in helping authorities apprehend two firebugs and recently attained international fame by assisting the flood-stricken Honduras area.

HTU-1 has trained selectees from the NavCad program, Marines, Coast Guard, and Air Forces of foreign countries as well as U. S. Navy pilots.

HU-2 Unit Goes to Pole

Helicopters Used for Observation

Eleven crewmembers and three HTL-4's from HU-2 have departed for the South Pole aboard the USS *Atka* (AGB-3) to participate in the current Antarctic expedition.

The HTL's will assist the scientists and weather men in their observation flight around the pole.

Pilots for the craft are: Lt. McCaw, Ltjgs. Tilghman and Moore, and (AP) Metrolis ADC. Other crewmembers are Sheddaker, ADC; Toothman, AD1; Marsonack, AD2; Rioles, AD3; Maser, AD3; Bear, AMAN; and Hayes, AT3.

The 'copters and men will return from the Antarctic cruise in April.



AN ARMY H-21C helicopter demonstrates its latest achievement, gas tanks that can be jettisoned. Designed to extend the range of the helicopter, the two tanks hold 165 gallons.



SIGNS GREETED JET PILOTS IN FUELING



GERBER, AM2, DID PAINTING ON THE PLANES

VC-6 Adds Humor to Task

AJ-2 Tankers Advertise Products

Navy and Marine pilots from VC-3 and VMF-214 were participating in IFR exercises over Hawaii recently, in which they practiced in-flight fueling from VC-6's AJ-2 tankers.

The tankers, deployed as a detachment aboard the USS *Essex*, were to demonstrate their fueling technique to the pilots.

Banshee pilots rendezvoused over Diamond Head with the *Savages*, and the jet aviators couldn't help grinning in their oxygen masks when they saw the noses of the AJ's. On one they saw a winged gas tank sitting in a nest of clouds with the inscription "We give S&H Green Stamps." On the other they saw a familiar advertising emblem with the ultimatum, "If you don't like our gas, GO TO SHELL."

The AJ pilots, Lts. J. T. Paraday and R. L. Dale, figured that as long as they were going to play the part of gas stations, they might as well "get with the program." They did it just once for a gag, and it worked out and added humor to the exercises.

Lt. Dale was a bit over zealous in his desire to assist, for as each pilot engaged the drogue from his aircraft they read, clearly printed inside the funnel, "Check your oil?"

Pilot Saved by Ejection

Radcliffe's Plane Explodes in Air

Seconds before his USS *Yorktown* based F9F-6 *Cougar* exploded in mid-air, Ltjg. G. R. Radcliffe, of VF-153, ejected above Sillanguin Island in the Philippines.

He was just pulling out of a practice strafing run and discovered that he couldn't get the nose of his *Cougar* up. He took a quick glance at his instruments and found that the tailpipe temperature was "hot enough to melt the engine."

His division leader shouted into his mike to Radcliffe to "Jump! Your tail is on fire." Making all the necessary steps for ejection, he snapped the face curtain and was hurled clear of the jet at 8,000 feet just before the jet burst into flames.

He landed safely on Sillanguin Island and was picked up by a helicopter from Sangley Point, piloted by Lt. E. J. O'Malley. The aircrewman with him was G. R. Brooken, AD1.

VJ-61 Completes Survey

Detachment Charlie Returns Home

Detachment C of VJ-61 has completed an extensive aerial survey of the Hawaiian Islands for the U. S. Coast and Geodetic Survey and has returned in their AJ-2P *Savages* to their home port, NAS MIRAMAR.

Led by Lt. R. E. Novotny, the detachment spent three months at NAS BARBERS POINT. The negatives taken during the survey were turned over to the USCGS to be analyzed and converted into maps.

The squadron maintains detachments all over the Pacific, one in Alaska and one in the Far East at Atsugi, Japan.



RADM. E. A. Cruise, ComCarDiv 6, presents the Battle Efficiency "E" plaque to Capt. H. E. Sears, CO of the USS *Coral Sea*, as the Flag Secretary, LCdr. J. E. Peterson, looks on.

FASRON TWO, MASTERS OF AIRCRAFT REPAIR



HOUSED in one of the hangars at NAS Quonset Point, FASRON Two performs important logistical support to carrier-based units. This hangar is large enough to facilitate handling ten planes.

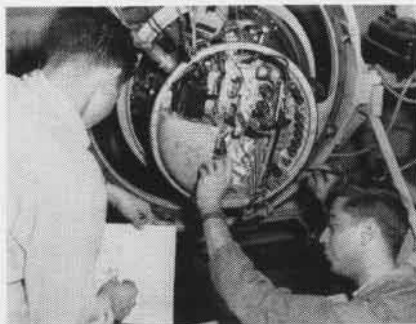
SOME automobile mechanics can listen to the exhaust of an automobile and diagnose car troubles. A good TV repairman can twist a dial on a set and tell what is needed to bring it back to peak performance.

This isn't guesswork, it's experience. These men have been "through the mill" and have probably repaired numerous cars or TV sets plagued with the very same trouble.

The Navy's aircraft repairmen are of the same stuff that makes good mechanics and TV-repairmen in civilian life. The only difference is that in the Navy, the operation is on a large and

extensive scale with continuous research.

When a Navy airplane needs repair, it is sent to a base which has the facilities and the men to service expensive equipment. These technicians do some



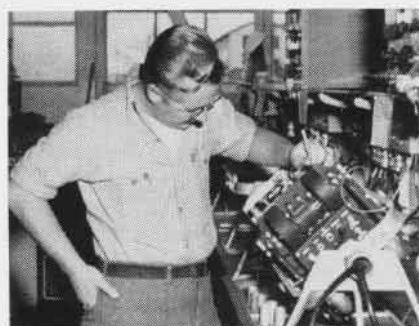
SERVICE testing of classified electronics gear is undertaken by Klingensmith and Butler.

300 odd jobs ranging from complicated engine tear-downs to manufacturing odd bolts and nuts. The Navy specialists work in a small, factory-like setup on a rigid schedule to keep aircraft in top condition. Their direct responsibility is to support the various squadrons based in the area and service squadrons based on aircraft carriers.

Units that offer specialized services to the Fleet are known as FASRON's in the Navy, and they employ the most highly skilled technicians that can be found. Typical of the numerous Fleet Aircraft Service Squadrons throughout

the world, is FASRON-2 at NAS QUONSET POINT, commanded by Cdr. F. M. Roundtree. This squadron's job never ends.

As specialized maintenance workers, FASRON-2's jobs are varied. They range from painting aircraft to making engine changes. FASRON-2 does only those jobs, short of overhaul, which cannot be accomplished by the individual squadrons. Where the work required is minor enough for squadrons to do themselves, FASRON-2 supplies them with the necessary parts from their huge stores. Their supply department carries a complete line of

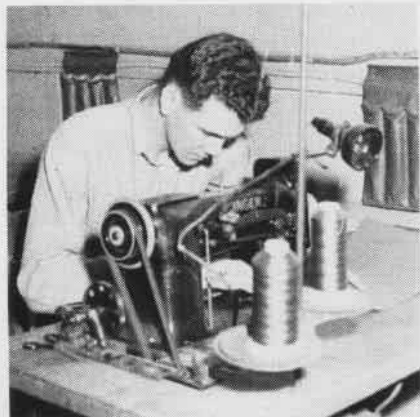


E. TKACS, AL1, is one of FASRON Two's many experienced men who repair electronic gear.

spares needed for the many jobs that come into their "factory."

When an aircraft is turned over to a FASRON for even a minor discrepancy, the unit takes this opportunity to perform a certain amount of preventative maintenance on the plane. This takes 12 specialists, electronics men, structural mechanics, and the like, approximately three days to complete. This three-day span includes all necessary repairs and adjustments and any late modifications ordered by BUAER. The plane will not be returned to a squadron until it has been completely and thoroughly checked and approved for service.

FASRON-2's maintenance expert is LCdr. A. E. Gardella. When an aircraft first arrives, he is the man to whom all requests for repairs go. Then he and Lt. A. E. Tripp, his assistant, oversee the entire operation as the work is being done. These two men are also responsible for the routine upkeep of the aircraft, the tools required to do the job, and the proper recording of all au-



WILDERMUTH, PR2, makes repairs on chute covering that one of nine squadrons will use.

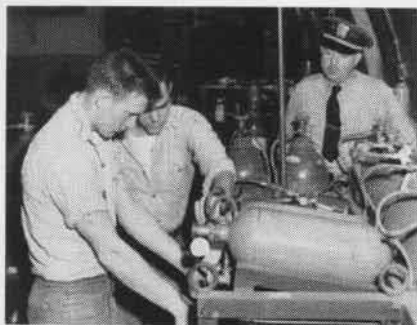
thorized modification to planes.

The aircraft then goes to Ens. R. W. Riegel, production and inspection officer, who figures out the work schedule for each shop. In this way no unit has more jobs than it can handle. Riegel makes daily compilations of the man-hours available for the day, and then jobs are assigned. Work figured in advance by this method gives the officers-in-charge of the various sections an opportunity to adjust their crews accordingly. Although normally FASRON-2 personnel are kept continually busy, some are held in a reserve status to do top priority jobs coming in unexpectedly.

Once the work schedule has been planned and the aircraft assigned to hangar space, the separate departments begin to disassemble the craft and remove only those parts with which they are primarily concerned.

The power plants officer, Ltjg. R. H. Wright, supervises all work being done on the engines. J-34, J-48 and the R-3350 engines are some of the diverse types of engines that come into his shop.

The airframes officer, ChMach. C. R.



CHIEF Machinist Hunsucker oversees oxygen transfer by George and Patti in their shop.

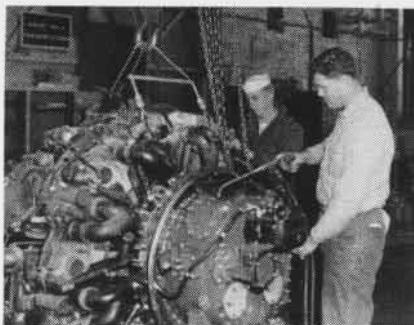
Hunsucker, heads the structural end of the intricate operation of repairing an aircraft that comes to the squadron. His crews work the hydraulic shop, actuating cells, metal and machine shops, paint shops, carpenter shops and the parachute loft. The parachute loft supports nine squadrons, repairing and packing chutes for their pilots.

ChGun. F. O. Holder, squadron officer, sees that his group strips and tests the guns from the aircraft. He personally supervises all work that comes under the cognizance of the ordnance division.

In the classified shop, the responsibility for proper function of electronic

equipment is placed on the shoulders of ChRele. H. B. Crowder. His task is seeing that the equipment is service-tested and in proper working order before it is returned to the plane.

The line maintenance officer, Ens. H. R. Whitehouse, is in charge of maintaining an aircraft pool. At present 25 aircraft, assigned to the area by Com-AirLant, are kept in a reserve status to replace squadron aircraft when they are beyond repair capabilities of the FASRON. He oversees the daily preparation of aircraft for flight. He also makes pre-flight and post-flight inspec-



TECHNICIANS Harrigan and Morgan make adjustments on engine of the AD Skyraider.

tions of the craft and corrects any minor discrepancies that might occur.

FASRON-2 acts as a liaison for reserve squadrons from all over the country. When a reserve squadron—say VA-882 from Olathe, Kans., or VF-741 from Jacksonville, Fla., or even VF-836 from nearby New York—comes to Quonset

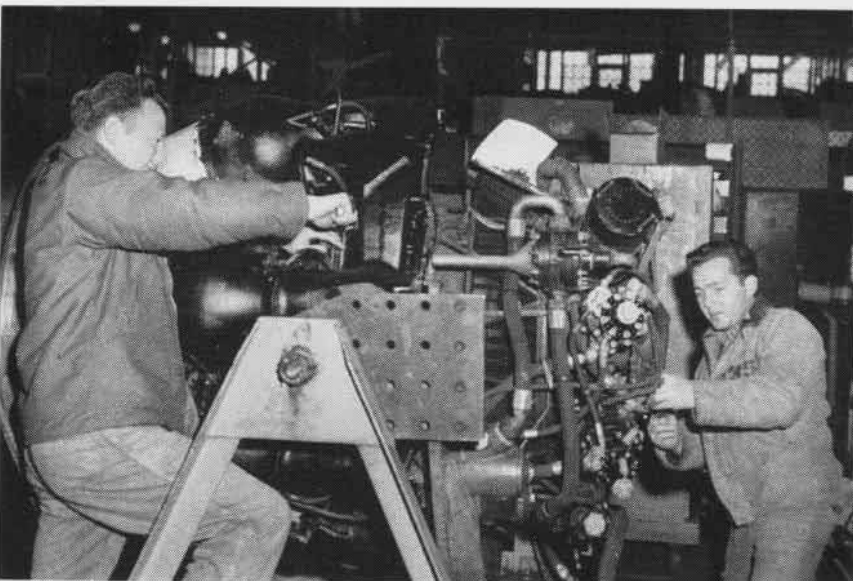


EXPERTS at stripping and repairing 20-mm cannon are C. W. Ray and W. A. Rinker.

for two weeks' reserve training, it is sent to FASRON-2. The "Weekend Warriors" are indoctrinated in various maintenance procedures while they are with the unit.

They work in the shops alongside FASRON personnel and gain a working knowledge of the problems and procedures involved in repairing a flying craft. This is just one of the many ways FASRON-2 serves the Navy.

FASRON-2 is a flexible organization with all departments of the squadron working together to achieve one goal—that of keeping Fleet aircraft flying. The squadron works with maximum efficiency and were it necessary to switch to a wartime basis, this could be done swiftly and without interruption to the normal operation of FASRON-2.



ENGINE changes and latest modifications to various types of aircraft is a never-ending task for the men of FASRON Two. Here Spinney and Abbene make modifications to one of many jet engines.



LAREW TAKES GREEN DERBY FROM KINNEAR

'Green Derby' Liberated Famous Hat Given to 'Blackbirds'

Back in 1951 VA-45 was deployed aboard the USS *Oriskany* in the Mediterranean. Lt. George E. Kinnear was returning from a party in Geneva, Italy, in a horse drawn cab.

The driver of the cab was wearing a small derby which Kinnear took a fancy to. After some haggling, the driver agreed to sell Kinnear the hat for 700 lira, slightly more than a dollar.

He took the hat back aboard with him and his squadron teammates talked him into painting it a vivid green and attaching it to his helmet.

The hat became more than just a hat, for the pilot who wore it was faced with the responsibility of making perfect take-offs and landings, and it would

never do for any pilot to take a wave-off when wearing it.

The hat has become squadron legend and just before Kinnear left the squadron at NAS JAX, he decided that it should become a permanent fixture with VA-45.

At ceremonies in VA-45's ready room, Ens. H. B. Larew accepted the hat from Lt. Kinnear as he made his departure.

Movie Screen Improved NATTC Instructor Inventor Lauded

Michael R. Cromwell, AM1, an instructor at NATTC MEMPHIS, has received a letter of commendation from his CO, Capt. G. R. Luker, for designing a translucent vinyl plastic projection screen.

The center has made four of the new screens to date with a saving of over \$200 to the Navy. Simple in construction, the screen is made of a wooden frame, a sheet of vinyl plastic, and an old-fashioned window shade roller.

In addition, it has been discovered that the plastic transmits up to two and a half times the amount of light reflected from ordinary beaded or aluminum faced screens.

The new screen makes it possible for the instructor to stand behind it to point out information for emphasis.



A WARM welcome for a rather wet Navy lieutenant is extended to C. P. Baker, Jr., by his CO, Cdr. E. M. Volz. Baker parachuted from his crippled F9F, then took pics of his descent. Note camera in his left hand.

Supply Corps' Age Now 160 12th Year for NASD Philadelphia

This month Naval Aviation Supply Depot, Philadelphia, is celebrating a dual birthday: the depot's 12 years as a member of the Supply Corps, and the 160th anniversary of the Corps.

The commissioning of NASD in 1943 was the establishment of the Navy's first aviation supply depot, and marked the linking of aviation supply with the Navy Supply Corps.

In 1941 as clouds of war began to hover low, the nation was beginning preparation to defend itself in a struggle of arms. When the storm broke over the nation in late '41, materials pertinent to Naval Aviation, along with all other supplies, began to pour into the Navy in an ever increasing stream.

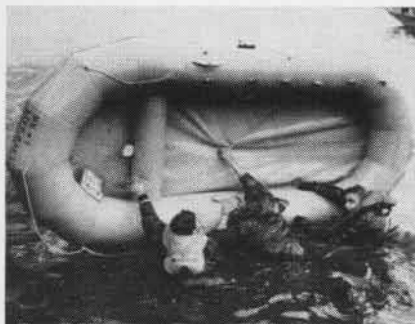
By late 1941, the present aviation supply system began to take shape, as distribution points and major supply points for aviation supplies were designated, and the Aviation Supply Office was established as a central procurement for aviation materials. Only a few months passed before the need for a naval aviation supply depot on the eastern seaboard and expanded facilities for the Aviation Supply Office became apparent. The presently occupied buildings were the answer to these needs.

During both WW II and the Korean conflict NASD and ASO played a vital role in the procurement and distribution of aviation materials to our fighting forces in all parts of the world. They did their part in discharging the task that the entire Supply Corps has set for itself—that of service to the Fleet.

● The Air National Guard today has a strength just under 50,000 men, the highest in history. There are now more than 600 recognized units.



THE NAVY and Martin Aircraft unveiled the radically new XP6M-1 seaplane in January. The big aircraft is powered by four Allison J-71 turbojet engines with take-off afterburners and is capable of speeds over 600-mph. The Seamaster will cruise at 40,000 feet and will carry a 15-ton payload. New hull, T-tail, and inverted dihedral in wings, are features.



RIGHTING OVERTURNED RAFT PRACTICED

Ice Water Dunking Drill VP-10 Has Post-Ditching Exercises

Cdr. Robert J. Fleming, CO of VP-10, wants his pilots and men to be ready for anything, including an unexpected swim in the icy North Atlantic waters



GETTING IN RAFT CORRECTLY IS AN ART

of the area over which they patrol.

It takes an uncommon sort of courage to deliberately jump into 35° water, but Cdr. Fleming set the example and pilots and crewmen of his squadron followed. Clad in their anti-exposure suits, the men frolicked for a little while, and then went about the serious business of inflating rafts, practicing righting them when they overturned, and getting in and out of them.

All VP-10 crews are members of the select group of "Bluenoses" (having crossed the Arctic Circle). But for their anti-exposure suits they may well have been blue all over and for good.

IFR-IQ?

The pilot in command of an aircraft is the only one person authorized to cancel an IFR flight plan. True or False?

Answer on Page 40

Almost FORGOTTEN EVENTS



THIS IS TYPE OF N-9 SEAPLANE IN WHICH EVANS PERFORMED IMPOSSIBLE FEAT

LOOPING OF AN N-9 SEAPLANE



EVANS REMINISCES WITH A VISITOR

THE LOOPING, spinning and whip-stalling of land-based aircraft was as commonplace as the ankle length skirt back in 1917, but no one had ever taken a seaplane through such stunts.

The accepted aerodynamic theory was that a pilot who found himself in any one of the three predicaments was just 'a piece of cold meat.' That was until 13 February 1917 when a young Marine captain decided to do something to prove his own aerodynamic theory on the N-9.

Francis T. Evans was a flight instructor at the Aero Camp, Pensacola. He'd been designated a pilot just 20 months before the eventful day. On this day he did not have a student to teach.

After climbing steadily for 25 minutes he reached an altitude of 3,500 feet. He was alone and without a parachute.

Going into a power glide, he

eased the nose of the plane up slowly at first, then with increasing control until he succeeded in looping it. Then he whip-stalled the aircraft and spun it. His horrified audience on the ground watched as he continued his unorthodox stunts, and none relaxed until he had landed and taxied up to the ramp.

Nineteen years later his daring feat was formally recognized when he was presented the DFC.

THERE are three DFC's in his family now, his own and those of his two sons. The sons won theirs as Air Force pilots, one during WW II and one in Korea.

Colonel Evans has retired from the Corps and is living a quiet and comfortable life at Wellington Villa, overlooking the Potomac River, near Alexandria.



PHOTO NAVIGATION YIELDS EXACT DETAILS

GRAPH-LIKE lines on this optical aerial view finder assist the photo navigator in pinpointing the targets that are to be photographed.



LT. DEVIES, VJ-62's Det. Item, Photo Officer, goes over the day's schedules with Wagner, PHC; Rice, PH1; Brooks, PH2, and Baird PH2.



PRIOR to boarding, his powerful AJ-2P Savage, Rice checks the flight line for the day's mission. He's a fully qualified photo navigator.



LTJG. OLSON, pilot of the AJ-2P Savage, and Rice, photo navigator, check all-important weather reading before flight departure.



ANOTHER VJ-62 enlisted photo navigator is Updegraff, PH1. Here he checks flight line chart against flight line in optical viewfinder.

IN WAR, the success of any major effort depends upon the way the campaign has been planned.

Logistics, transportation, and supplies are but a few of the problems. One item essential to initiate planning of a campaign is intelligence. Experience has proved that aerial photography is one of the best means of acquiring military intelligence.

Unless there is available to the attacking command a complete and comprehensive outline of possible enemy strongholds, supply dumps, transportation facilities, port and docking installations, gun emplacements, etc., the mission is due for failure from the kick-off.

During WW II, and just prior to the Kwajalein campaign, the Commander of the Amphibious Forces, Pacific, refused to land Marines and held up an entire force for three days until the area to be assaulted could be thoroughly photographed. Aerial photography assured success.

The right seat of the AJ-2P *Savage* is where aerial photography begins for the Navy's two long-range photographic squadrons. The importance of this seat cannot be over-stressed, for the man who sits there is the prime factor in making the mission a success.

From this right hand seat, he is in control of 17 different types of cameras that the AJ-2P can carry.

In order to turn out more qualified photo navigators, these squadrons have picked their top enlisted men in the PO1 and CPO brackets to sit in this "driver's seat."

They are selected on their demonstrated ability and are trained to attain



POWERED by two conventional piston engines and one jet, the AJ-2P *Savage* shows her underside and a few of the openings in her hull where 17 different types of cameras can be installed.

exactness in this highly skilled art.

The course in which the photo navigator must reach near perfection to be qualified as such, is fairly long—two to three months—and it covers all phases of aerial photographic reconnaissance. Gigantic mosaic maps, photo reconnaissance, verticals and obliques at high and low altitudes, single pinpoint pictures of targets and miles of accurately flown flight lines over every kind of terrain are in the syllabus.

After each flight, the photographs are processed and the photo interpreters

and photo navigators go over the mission down to the last detail. If the photo navigator fails to get the desired material, he is sent back to get it.

Since most of the photo navigators' work will be done while in flight, that is where the greater part of his training is held. Sighting along the thin hairlines of the aerial optical viewfinder, the photo navigator can direct the AJ-2P dead on his target.

Besides being the navigator during photo hops, he is also trained to be the radar operator in event of emergency.



MISSION completed, Updegraff leaves the right seat of AJ-2P *Savage* for flight debriefing.



CONFIDENT that the mission was a success, Updegraff chats with plane's pilot, Lt. Doster.



LTJG. GRIENKE checks Updegraff's flight lines to determine how accurately flights were flown.

HELICOPTER SENTINELS IN KOREA



WITH COMMUNIST NORTH KOREA AS A BACKDROP, VMO-6 L-19 FLIES PATROL MISSION

AN AIRCRAFT in the air over Korea continuously for eight years? This is the claim of Marine Observation Squadron Six. The squadron recently completed its 70,000th airborne hour when Maj. L. A. Miller set his hoess down on a small asphalt-topped airfield south of the 38th parallel. His squadron CO, Maj. R. L. Rathburn, presented him with a new cigarette lighter appropriately inscribed.

Its peacetime mission in Korea is to guard the south border of the demilitarized zone established by the United

70,000 hours include an average of over 2,500 flying hours per month for the four years since its arrival in Korea in 1950. A total of 7,157 casualty evacuations were flown of which about 1,700 were at night.

VMO-6 claims the first successful night evacuation in history when a helicopter piloted by Capt. V. A. Armstrong evacuated a division surgeon to a rear aid station on the night of 8 August 1950. It also asserts that it was the first helicopter squadron of any service to go into combat as a unit.

Though a small squadron, the total monthly flight time of VMO-6 ranks high with the First Marine Air Wing. The squadron is now equipped with the L-17, the hoess and the L-20 to carry out its missions.

The helicopters fly transport, reconnaissance, liaison and evacuation missions. Pilots and aircrewmembers of VMO-6 are still on a 24-hour-a-day standby status for emergencies of any kind.

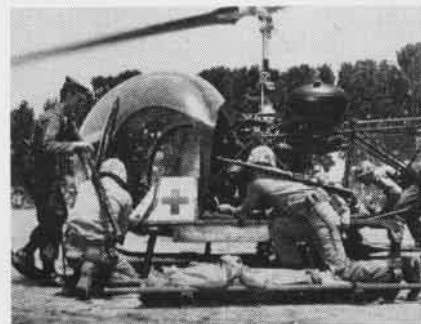


VERSATILE HOESS IS A SQUADRON MAINSTAY

Nations at the cessation of hostilities. Not only do these pilots guard against violations of the truce by the communists but by our own aircraft as well. It's an automatic court-martial for any aviator caught violating the truce line.

VMO-6 has its own messing facilities, operations, air maintenance, security, water point and enclosed theater.

Significant highlights of the squadron's achievement in attaining its



CASUALTY EVACUATION IS VMO-6 SPECIALTY

Sets Maintenance Record VR-7 Hits New Low of 3.1 Percent

VR-7 hit a new low figure for maintenance delay, for PacDiv MATS squadrons using the *Super-Constellation* type aircraft.

Efficiency of maintenance and ground operations is measured in the Maintenance Delay Record—the percentage of flights delayed on take-off from maintenance causes. VR-7's record of 3.1% for October was a vast improvement over the previous 7.0%.

Commanded by Capt. S. M. Adams, and based at Hickam AF Base, Hawaii, the squadron's maintenance department is under Cdr. H. N. Murphy.

October's maintenance delay record was followed up by VR-7's announcement that they had maintained the first R-3350-54 type engine in PacDiv MATS to reach 1,000 hours without a major overhaul being necessary.

VR-7 also holds the low maintenance delay record for any squadron using the R5D *Skymaster* type aircraft in the Pacific Division, MATS.

NROTC Guests of FASRon-5 Students Taken for Rides in F3D

Fourteen future Naval officers were given the VIP treatment recently by FASRon-5 at NAS Oceana.

Led by Cdr. Jack Longino, associate professor of Naval Science at Columbia University, the students were given

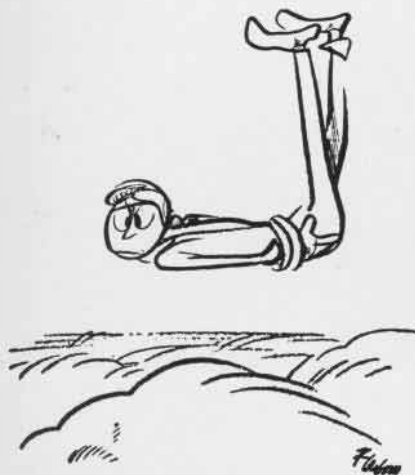


LT. TUCK (R) AND MIDSHIPMAN BOARD F4D

a first-hand glimpse of how a jet squadron is kept in top operational readiness. They were briefed on the different types of Navy aircraft and shown how a typical pre-flight intelligence briefing is given to squadron pilots.

Then came lunch at the squadron mess hall. The day reached its climax when Ltjg. D. A. Tuck fired up a two-place *Skyknight* and took each midshipman in turn for a short jet ride.

AND THERE I WAS ..



Couldn't Throw This Bull

EVERY year in the little town of Algemsia, Spain, citizens and tourists alike turn out for one of the fastest and wildest sports in the world. They declare a three-day festival and turn raging bulls loose in the city's streets.

Nine blocks are closed with 12-foot fences to keep the angry animals within a confined area, then the bull is turned loose and the fun begins. People run for shelter, but some wave capes and pull the bull's tail to enrage the beast.

During the last festival some of the USS *Coral Sea's* members were fortunate enough to view this spectacle. All enjoyed it greatly, that is with the exception of the *Red Rippers*.



"Matador," Harry E. Offenhauser. He was standing with some shipmates in a reasonably safe place in Algemsia during the festival telling them that, "all you have to do is look the bull in the eye."

Then without warning the shipmates scattered like bowling pins in a strike. Offenhauser turned and there staring him in the eye was El Toro himself. Putting his theory to work, he stood his ground and stared back. The bull was having none of this and bowed his head. With a bellow and a mighty up-thrust, the bull picked Offenhauser up and politely tossed him over his head (the bull's head).

He was rescued by a friendly native and taken to the balcony of a nearby house to watch the rest of the show.

A few days later, after Offenhauser had recuperated from his injuries, more mental than physical, the *Rippers* presented him with a matador's cape and a citation which read in part, "in recognition of the wonderful finesse and great daring which you exhibited in handling El Toro."

Soup's On!

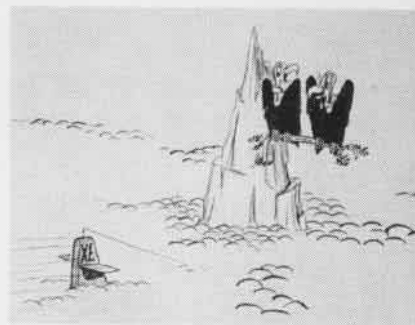
SAILORS who like soup never had it so good, according to the OD's logbook at NAS Los Alamitos.

As required by naval regulations, the duty

officer at this station eats three meals in the crew's mess hall each day. In his official logbook he then carefully enters his comments on the quality of food he has eaten. This official criticism is used by the cooks in their future planning of meals.

Here are the remarks of Lt. Gordon E. Talmage made in the logbook during a recent tour of duty as OOD.

"1130—Today's lunch was excellent. But



'HERE COMES OUR HOT LUNCH ON A VFR CLEARANCE'

extending above and beyond mere excellence was the soup. This portion of the lunch possessed rare qualities of flavor, texture, body and bouquet! Such heights in culinary art are achieved but once in a lifetime and then only by geni who are born—not made.

"1800—Evening meal very good. The great savory experience provided by the noon soup was repeated with no deterioration in its superb quality.

"0700 (Next day—Ed.) Morning meal was excellent. The hallowed memory of the superb and delicious soup still lingers on."

(Editor's note: Our Los Alamitos spies advise that the chef in charge faithfully followed the standard Navy soup recipe.)

They Wanted to Dye

A BARBER'S Point squadron was practicing open-sea ditching drills. With precision, the group dunked, inflated and hoisted themselves into life rafts. Gear was secured, rafts manned and radar reflectors were placed into position.

The officer-in-charge gave the order to fire a flare and release dye-markers. This went off without a hitch, and the order to secure signaling operations to await detection and rescue was given.

Five minutes later, the OinC glanced over at the water surrounding the raft in which two junior officers were embarked. Both had their backs to him and apparently had not heard the order. He had the word passed to them conveyor belt style, from man to man, raft to raft.

One of the junior officers rose from his crouching position to whisper a reply which was relayed back to the OinC by one of the old hands who said,

"Sir, the ensigns wish to apologize, for that isn't dye marker they are releasing. They've just never been to sea."

Rank Has Its Privileges

THE big carrier lay peacefully at anchor. It was early evening. The crew was ashore on liberty and the watch was being relieved on the quarter deck.

The relieving JOOD, as is customary, was given the dope and took over his watch. A few minutes later a small rowboat came close aboard with two young boys in it, both eyeing the big ship admiringly. On the second lap around the carrier, the JOOD stepped out on to the gangway platform and shouted, authoritatively, "Boat ahoy! You, there in the rowboat, stand clear of this vessel."

With that the rowboat approached the gangway and the larger of the two boys stood up and shouted, "You, there on deck, are you the commanding officer of that ship?"

Somewhat taken aback, the JOOD replied, "No, I'm the junior officer-of-the-deck. Why?"

The reply was a classic, "Sir, I would advise you to keep a civil tongue in your head because I just happen to be the commanding officer of this one."

"Mister" Gosport Speaks

BACK DURING WW II the word "gosport" was familiar to every NavCad flying in an N3N. It was a rubber tube used for communicating between instructor and student. Before taking off on a training flight, the student would hand the tube to the instructor so he could plug it into his funnel-shaped speaking tube.

One day down at NAS CORPUS CHRISTI, instructor "Loop" Canfield noticed that his student was goofing off. He wiggled his hand down through the seat and waved wildly at the student.

"Gosport! Gosport!" he yelled.

The student leaned toward his instructor, holding out his hand.

"My name's Williams, Mr. Gosport."



THUMBS-up signal is given to VF-24 pilot as Cougar jet engine begins to turn up. Here field engineer Kendall is timing the engine start.



FIELD engineer Cochran explains plug-in units of new radio to Gdr. Sewall, CO, as LCdr. H. Hlywa, XO, holds the pilot radio control box.

ELECTRONICS EXPERTS FOR FLEET SERVICE

"LET'S TRY it again," shouted the pilot, leaning his head around the canopy of the *Cougar*. The ground crew chief glanced at the tall man in the gray business suit who nodded his head. Two earlier attempts to start the noisy, churning jet engine had been unsuccessful.

The pilot turned to his cockpit and put his fingers on the "start" toggle and again leaned out. This time he raised his thumb to the sky. The chief signaled to the electrician at the starting unit control panel. The big engine roared to life and the chief watched the meter needles rise and then he returned the thumbs-up salute.

The pilot lifted the starting switch and felt the sudden load of the starting power unit. Toward the rear of the plane the jet blast began and the noisy crescendo of rushing air rose higher and higher. This time it was a good start. RPM's steadily rose, and the mobile starting unit ceased its straining and began to idle.

The gray-suited civilian glanced at the stop-watch and noted the time required for the start. This operation was finally successful, but now he had another job. As a field engineer for the Naval Aviation Electronics Service Unit (NAESU) his concern was primarily for the NC-5 electric power unit, but he was also thinking about the electricians and the pilot. The NC-5 needed adjustment, the electricians

could be given additional instruction on maintenance of the electrical relay system of the power unit, and the pilot—along with others in his squadron—could be given a refresher on jet starting procedure.

The NAESU field engineer is a manufacturer's representative, one of a wide variety of such engineers contracted for by BUAER. Helping operating activities make better use of the complex and expensive equipment furnished to them is his main objective.

NAESU engineers are supplied to the Navy by major electronic equipment manufacturers such as Philco, RCA, Raytheon, General Electric or Eclipse Pioneer.

He does not specialize in his employer's equipment and may do little work on such products during his whole career with NAESU. Instead, his experience and talents are expanded, and directed to serve the best interests of the Navy.

He stays with the Navy during the entire term of his contract and services all equipment for which he may have had special training.

In order to use the talents of service contract electronics field engineers effectively, BUAER established Naval Aviation Electronics Service Unit as a separate command in 1942. It is the controlling agency for the electrical and electronics field maintenance engineers employed by BUAER. When an engi-

neer reports to NAESU, he is assigned to such laboratory training classes as are required. This provides him with working experience on actual Navy equipment and its operational use.

HE MAY become an expert on all communication equipment used by Naval aviation or he may get further training and experience with search radar, intercept radar, aerological equipment, fire control computers, ASW equipment and even guided missiles. Other engineers may be trained in electrical systems, distribution and control devices, synchros, aircraft instruments and ground power equipment.

As soon as a new NAESU field engineer has completed sufficient training to enable him to conduct successfully any maintenance investigation likely to occur, he is sent to one of the major Fleet commands, such as the Air Force Atlantic Fleet. Here he joins a pool of other NAESU Engineers working with the Fleet staff electronics officer. There are 12 such pools, one with each major Navy and Marine Corps air command.

There are usually several field engineers assigned to a service group. These engineers are sent to Fleet activities by the Force or Fleet air commander when requirements for electronic engineering services exist. *Any Naval aviation activity may obtain help from NAESU field engineering serv-*

ices by submitting a request to the cognizant Force or Fleet air commander.

NAVAL aviation activities may request the services of NAESU field engineers whenever and wherever the need arises. As a result, interesting demands are made on the skills and ingenuity of the individual engineers. For example, when an urgent requirement arose for a lightweight radio which would enable ground officers to communicate with pilots of helicopters in Korea, NAESU engineers modified an existing life raft set. This successful model was then used as a pattern for similar installations in other helicopters operating with the Fleet.

Another field engineer developed a method of paralleling two crystals, each with slightly different frequency, on each of the regular channels of an existing fighter aircraft radio. This was done to meet an urgent need for additional tactical communication channels for Marine air support operations.

One group of NAESU engineers specializes in shop planning for aviation electronics requirements aboard aircraft carriers and tenders. Specialists in this program are stationed at various Naval shipyards such as New York, Philadelphia, Norfolk, and Bremerton; others work with ComAir-Pac and ComAirLant staffs.

Much of the progress in solving jet aircraft starting problems in the Fleet can be attributed to the efforts of NAESU field engineers. Until recently, squadrons were trying to find a safe way of testing the voltage and

current supplied by the NC-5 power unit used to start jet engines. These units furnish 1,000 amperes of low voltage power, and some method had to be found to dissipate the large amount of electrical energy under controlled conditions. The answer was a fuel drum full of salt water, into which another metal plate could be lowered by means of a pulley. This provided a completely adjustable and safe method of regulating current flow. This was improved by another engineer who devised a stainless steel tube, water-cooled, resistor load bank. The final production version is an air-cooled, stainless steel, wire mesh resistor load bank now being distributed.

NAESU engineers are called in to aid in some of the "Buck Rogers" projects also. Several NAESU men are being trained at NAMTC Point Mugu for future service to Fleet activities which are scheduled to receive guided missile capability.

Other NAESU engineers are working with the heavy attack wings on the special electronic equipment in large patrol planes and attack planes.

An increasing workload in O&R departments at naval air stations has caused a changeover from conventional shop bench repair methods to a more modern flow-line system of overhaul. The conception of O&R flow-line methods for electronic equipment repair began with NAESU engineers.

In some instances NAESU may receive a project assignment from BuAER which requires extended field evaluation of new equipment being intro-

duced into the Fleet. Such was the case at NAAS CABANISS, CORPUS CHRISTI, where three squadrons consisting of 36 AD and over 100 F6F type aircraft were given UHF radio installation for evaluation of the new ultra-high frequency radio equipment. A carefully controlled field evaluation, with emphasis on squadron maintenance methods, operating characteristics and installation difficulties, resulted in more than a hundred equipment changes and improvements.

NAESU field engineers are furnished to squadrons to investigate and correct the causes of repetitive failures, establish proper maintenance facilities and instruct personnel in correct maintenance procedures.

The command has nearly two hundred field engineers available. Some are specialists in aircraft electrical, ASW, AEW, and AI systems, navigation and communication equipment; others in various complex aircraft electronic/electrical configurations.

Every request for assistance receives full consideration and every possible effort is made to fulfill the requirements of all Naval aviation activities.

NAESU's Commanding Officer, Cdr. R. M. Sewall, says, "Better availability of aircraft and more satisfactory operational use of electronic services will result when maintenance technicians and operators have an opportunity to receive help and instruction of a NAESU engineer right in the squadron's own shops." He's in an excellent position to know what he's talking about.

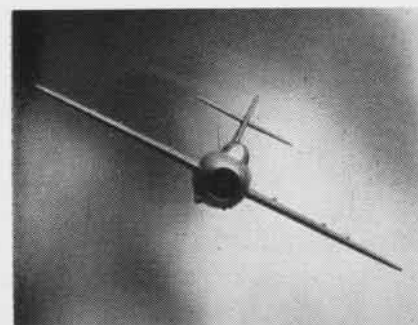
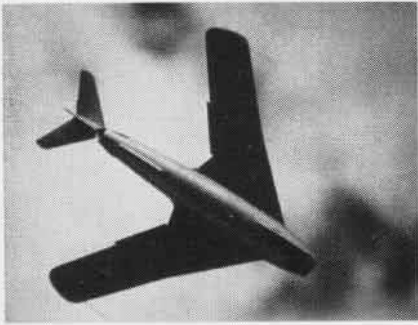
by H. P. Luckey



NAESU field engineers work in all sections of the world. Kapeghian wears summer uniform while attached to FASRon-119 in the Philippines.

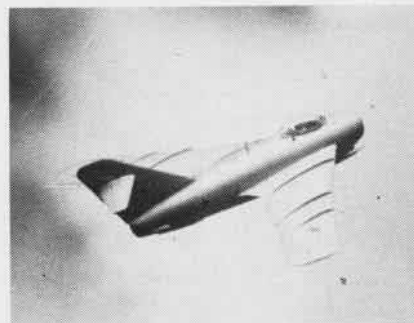
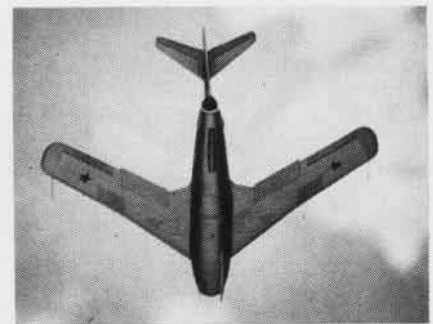
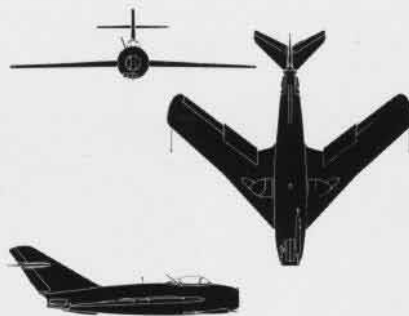


INTERCOM system routine upkeep and maintenance of Martin P5M Marlin are explained to Thomas, AT3, of FASRon-110 by NAESU's Dunklee.



THE NEW FRESCO

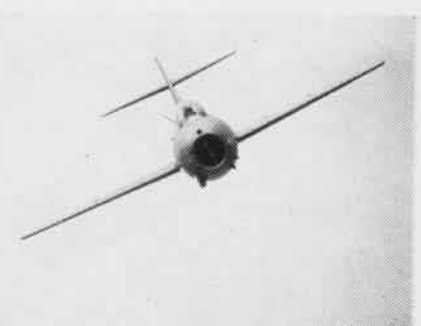
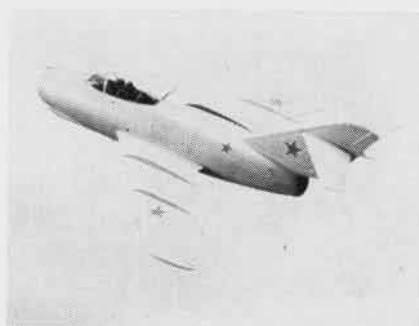
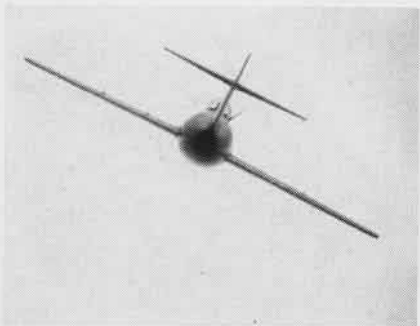
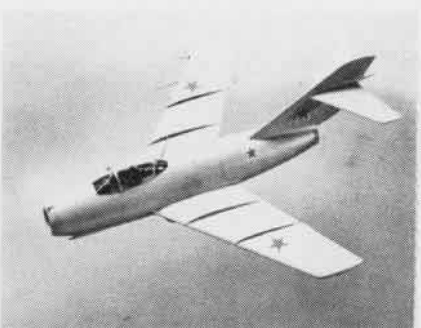
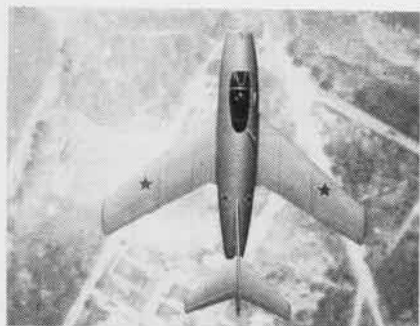
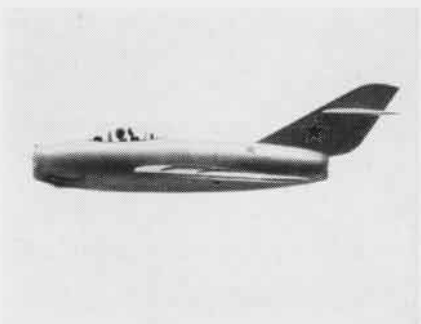
The *Fresco* (left) and the *Falcon* (right) are two of the Soviet Union's operational fighters that have similar recognition characteristics. These aircraft must be known well if they are not to be confused with one another or with newer types of the West. Note the greater sweepback, the larger fillets to the trailing

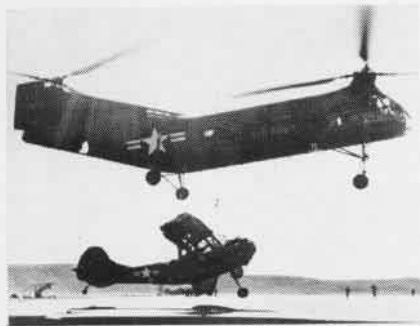




FAMILIAR FALCON ★

edge and the "cranked" leading edge to the wing of the *Fresco*. The *Falcon*, the *Mig-15*, has the fin and rudder extending farther aft of the tailpipe than the *Fresco*. Both aircraft are single jets with similar air intakes. Both appear to have the same armament. *Fresco* performance figures are not yet released.





THIS battered L-19 Grasshopper crashed on a sand bar in the Kansas river on a flight from Fort Riley. Then the Army H-21C salvaged it.

Gas King Thwarts Mishap Gramp Pettibone Says 'Well Done'

Naval Aviation's sage old sentinel, Grampaw Pettibone, passes along a pat on the back and a "well done" to Michael Ippolitto, ADAN, of VR-32, for his alertness in preventing a possibly costly aircraft accident recently.

Ippolitto, a member of VR-32's line crew, was checking the port wing tank of a TV-2 when he spotted a roll of masking tape inside. He took a pair of long rod pincers and pulled it out.

His instant action possibly prevented a fatal accident to some Naval pilot.

Jet Training in Hawaii Red Devils Train 56 in one Month

During the year that the *Red Devils* squadron has been based at MCAS KANEHOE, 56 pilots have been trained and sent on to the Far East for duty with elements of MAW-1.

LCol. William M. Watkins, squadron CO, says, "Whereas it normally takes six months or so to train a pilot for combat duty, fliers here have been able to pile up enough training hours in the air to qualify them for duty in as little as three months."

In one 13-month period, the pilots flew a total of 7,264 flights, completing 10,759 hours in the air. Included in this were 6,893 daylight hops and 371 night training operations. During the period, an average of 13 jets were continually in operation.

In preparation for carrier training, 4,454 FCLP's were made while 225 actual landings were made aboard the USS *Essex*. During this time not one pilot or plane was lost in training.

The squadron has been flying the F9F *Panther*, but has recently changed over to North American's FJ-2 *Fury*.

New Research Helicopter Bell Builds Gas-turbine 'Copter

The Air Research and Development Command has announced the first flight of Bell's new gas-turbine powered helicopter, the XH-13F, at Fort Worth, Texas.

Bell pilot William Quinlan flew the new craft for about one hour during the initial flight test and commented



TURBINE-POWERED BELL XH-13F IN FLIGHT

on its operational smoothness. Smoothness is one of the primary assets of turbine power plants since engine vibration is almost eliminated. This permits the mounting of the engine directly on the fuselage, separate from the transmission and rotor assemblies.

Noise level on the ground and in the cabin has been definitely lowered with the use of gas turbines.

Beaufort Back in Service Designated AFL for Cherry Point

Another airfield was added to the Cherry Point air bases complex when CNO recently designated the airfield at Beaufort, S. C., an auxiliary landing field. It is under the administrative control of MCAS CHERRY POINT.

Originally built by the Navy as a temporary training facility in 1943, Beaufort Airport is located 10 miles north of Parris Island, S. C. At the conclusion of WW II, the station was turned over to the county of Beaufort for use as a county airport, under terms of a revokable permit.

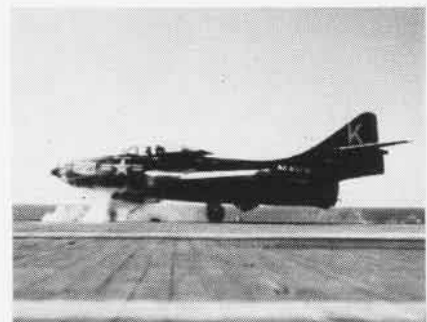
An appropriation of \$11,096,000 for fiscal year 1955 construction at Beaufort has already been authorized. The main item of planned construction beginning next July is the building of over \$2,000,000 worth of modern type barracks. Included in the remainder of the authorized funds is to be land acquisition, construction of hangars, a

bachelor officers' quarters, an administration building, phone center and parking aprons.

Under the terms of two contracts, valued at \$1,300,000, which were let in June 1953, construction is underway on runway extension and strengthening, taxiways, parking area, lighting equipment, and the control tower.

On completion of the station, the airfield will be worth approximately 60 to 65 million dollars. It will be designated a Marine Corps air station and, with the exception of an overhaul and repair department, and a training group, will have about the same facilities as does the Cherry Point station.

● NAS CECIL FIELD is one of the Navy's largest master jet stations. Currently based there are FASRON-9 and three air groups, with a fourth scheduled to arrive shortly. Cecil Field is sometimes mistakenly called an NAAS.



F9F-6 Cougar is 'stopped' by photographer as catapult slings fall free. Steam spray is typical of steam 'cat' shots as demonstrated by VF-33 pilot on USS *Intrepid* at sea.

Lyautey FWC Adopts Girl Dutch Girl One of Seven Children

A Dutch girl, Marie DeRus, 12, has been adopted by personnel of Port Lyautey's Fleet Weather Central.

Marie is the fifth of a family of seven. Her father was sent to Germany for forced labor during WW II and on one of his trips home attempted to hide so that he could remain with his family. He was captured by the Nazis and condemned to Buchenwald. The Allies rescued him from the gas chamber, but he was killed by a British truck while employed in Europe.

Marie's adoption assures her of clothing and food and a greater degree of family security. The adoption consists of regular financial aid to her in her native Holland, and letters from her FWC foster dads many miles away.



VIGILANCE is maintained by men and equipment of Airborne Early Warning Squadron One in this huge specially equipped Super-Constellation WV-2 aircraft. The flying radar station with its six tons of radar gear capitalizes on height for detection of intruders.

NAVY'S SENTINELS BEYOND THE HORIZON

FROM AN AERIAL command post in the Navy's new early warning airplanes, 26 men and six tons of radar equipment stand guard. Their early warning mission is carried on despite fog or rain or darkness.

The men are flying in one of the Navy's new *wv-2*'s. Six tons of radar roaring through the sky can spot "enemy" invaders and direct their destruction without ever actually seeing the intruder.

Flying *wv-2 Super Constellations* crammed with radar and special electronics devices, the Navy is developing a whole new air-age concept of offensive and defensive tactics. The highly trained men of these units, such as Airborne Early Warning Squadron One, are proving that the new scheme works.

VW's, as the squadrons are called, are endowed with two primary missions. The first, and probably the most important, is to locate and give warning, earlier warning than by any other method, of an enemy's air or sea approach. Secondly, they track such targets and direct defending craft into position to destroy the invader which might otherwise go undetected.

The Navy first developed its idea for aerial radar spotting and combat directing during WW II. Airborne Combat Information Centers are an extension of the CIC and Fighter Director set-ups aboard surface vessels,

particularly fast carriers of the Fleet.

First shipboard CIC on the carriers *Yorktown*, *Lexington* and *Saratoga*, were elementary installations by today's standards—one radar scope, two plotting boards and a blackboard. Four officers and 21 enlisted men staffed the stations. *Essex* carriers were far better equipped, and CIC became an exact science and proved its indispensability during the last two years of WW II.

It was a normal development to take the CIC aloft, literally extending the ships' masts thousands of feet. In 1947, the Navy procured two *Constellations*, called *wv-1*'s. Their success led to the purchase of the subsequently developed *Super Constellations*, the *wv-2*'s.

The *wv-2*'s can perform with all types of Fleet forces, including amphibious and submarine units, and can work on missions of search and rescue, recon-

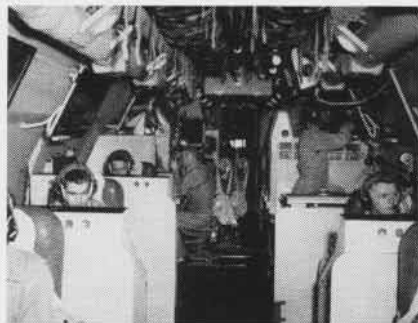
naissance, weather observation or anti-submarine warfare. A battery of radar consoles and plotting tables fills most of the *wv-2*'s fuselage.

Technicians at five plotting consoles observe various presentations or segments of the same basic radar picture and work on a variety of search and intercept problems.

Auxiliary electronic units provide specialized presentations, such as geographic reference or relative ground position. Cameras can record automatically any picture on the radar scopes, for later reference, if desired. The radar picture which one plane receives can be relay-transmitted to another plane or surface ships for operating flexibility.

Externally the *wv-2*'s resemble *Super Constellation* airliners with the famed triple-tail trademark of Lockheed. But they have a seven-foot-high "fin" atop the fuselage, to house height-finding radar gear, and a mushroom-shaped "bubble" underneath for distance-measuring radar.

Cdr. A. H. Perry, CO of *wv-1* summed up the *wv-2* operations pretty firmly when he said: "A major pay-off from airborne early warning, whether it is a matter of continental coastal defense or Fleet protection far at sea, is detection of invaders before they reach striking distance. This provides more fighting time and organized battle plans in lieu of sketchy tactics."



NERVE center of all WV-2 aircraft is the CIC room shown here with the men at their posts.



NAVAL AIR ADVISORY COUNCIL MEMBERS PAUSE IN THEIR DISCUSSIONS FOR A PICTURE. VADM. R. A. OFSTIE FRONT RIGHT.

NAVAL AIR ADVISORS HOLD ANNUAL MEETING

THE NAVAL Air Advisory Council, composed of nationally known business and professional specialists, recently held its annual meeting in Washington to be brought up to date on the most recent advances in Naval Aviation and some problems areas to be encountered in future development.

History of the Council started in 1946, when RAdm. H. B. Sallada, then Chief of the Bureau of Aeronautics, initiated steps to retain for the benefit of the aeronautical organization the interest and continuing support of Naval Aviation Reserve Officers who had been demobilized. To this end the Naval Air Reserve Advisory Council was formed and made part of the Naval Air Program on 30 March 1948.

For five years, the organization was sponsored jointly by BuAer and DCNO (Air). In 1953 the sponsorship for the Council was assumed by the Assistant Secretary of the Navy (Air), and the word "reserve" was dropped from the organization's name to broaden the scope of its activities. Last year 14 new members were appointed, all of whom are participating members of Naval Air Reserve squadrons. These additions brought the membership up to 68, consisting of 48 active and 20 honorary participants.

The four major objectives of the

Council are: to make available the unbiased, collective advice of its membership; to offer individual and collective civilian experience and civilian talent to the solution of problems relating to Naval Aviation; to promote wider public understanding and acceptance of the role and capabilities of Naval Aviation in National Defense; and to create improved liaison between the industry and the military. To achieve these objectives, the Council must be aware of the problems involved, and this annual "meeting of the minds" furnishes the opportunity.

Capt. Lewis K. Marshall, manager of the Lincoln-Mercury Division, Aircraft Turbine Plant, was chairman of this year's Council. Members represent a wide variety of professions: presidents and directors of banks and railroads, lawyers, educators, manufacturers, insurance executives, investment brokers, a city manager, and the president of Macy's.

The first speaker, VAdm. Ralph A. Ofstie, DCNO(Air), briefly outlined the Navy's role in the air defense of the United States. RAdm. Apollo Soucek, Chief of BuAER, gave a resume of naval aviation in terms of the procurement of material. He emphasized the substantial progress in catapults and arresting gear which has

been accomplished, and lauded the advances made by establishment of BuAER Reserve Training Units in many cities.

VAdm. M. B. Gardner, DCNO- (Plans and Personnel), described recent developments, such as the steam catapult, the canted deck, the nuclear submarine, and the highly promising VTOF. He emphasized that in 1956-1957 the fast carrier task force will be a far cry from what we knew in 1945.

VAdm. A. K. Doyle, CNATra, outlined some of the problems of his command; for example, the problem of attempting to use obsolescent equipment and facilities in training pilots in the jet age. He explained the plan of phasing out the venerable SNJ by December 1959, replacing it by the T-34 and T-28.

Capt. Harry R. Horney, Chief of Staff, NAResTraCom, spoke in the absence of RAdm. Dan V. Gallery. NavCad procurement and the attendant difficulty in meeting quotas were described as urgent problems.

The Director of Air Warfare Division, RAdm. Paul H. Ramsey, emphasized the Navy's responsibility in anti-submarine warfare, and how the Navy proposes to meet the threat of potential enemy submarines.

Several officers attached to BuAER

were called upon to discuss progress in air warfare and the production plans necessary to implement it.

HIGHLIGHT of the meetings came when AstSecNavAir J. H. Smith, Jr. met the group. He gave a broad picture of where the Navy is going in new aircraft designs and improved training programs. He pointed out that Pensacola is a much bigger source of officers than Annapolis. He stressed the fact that an enemy's fear of our power to retaliate is the greatest deterrent to war.

The second day of the meeting was spent at NATC PATUXENT RIVER, where Council members saw demonstrations of some of the equipment previously discussed.

Capt. Theodore B. Focke, President of the National Radiator Co., Johnstown, Pa., was designated Chairman of the Council for the ensuing year.

Good Neighbors in School

Como Se Dice 'Fire Helmet,' Amigo?

Two officers of the Argentine Navy were among those who went through the fire fighting course recently conducted at NAS NEW ORLEANS.

Coming to the Crescent City from the Aviation Naval Command, Buenos Aires, Argentina, to take possession of a PBM their government had bought from the U. S., Lt. Julio Rodriguez and LCdr. Carlos Maselli availed themselves of the opportunity of attending the school which was conducted by fire fighting experts from NATTC MEMPHIS.

Rafael Rey, TD2, a fluent linguist, attached to NAS New Orleans, was interpreter for the visitors during their visit aboard the station.



SEVEN Air Explorer Scouts from Barbers Point bend an attentive ear as LCdr. S. W. Correll of the Essex shows off one of Navy's AD's.

Like Father — Like Son

Jax Has Three New 'Family Teams'



MC CLELLANDS POSE WITH CO AND THE BOSS



'HERE YOU LOAD THE ROCKET RACKS, SON'



WEEKEND WARRIOR SWORN IN, FAMILY STYLE

It's a good thing, we think, to keep the Navy in the family, or perhaps, more aptly, to keep the family in the Navy. From NARTU JACKSONVILLE comes an account of three father-son teams.

James F. McClelland, AD1, is attached to NARTU, and his son, James Jr., is a member of VP-741. They are shown in Washington, D. C. with VAdm. R. A. Ofstie and Capt. J. L. Counihan, former NARTU CO. This was the last stop made on VP-741's 16,000 mile European Two Weeks Training Duty cruise last summer.

A new father-and-son team of the same squadron is Waldo Page, Chief Aviation Ordnanceman and his step-

son Airman Recruit George Gallie. A recent enlistee in the unit, George is still a high school student.

Sworn into the Naval Air Reserves by his father, Capt. Edwin J. Young, Sr., Edwin James, Jr., is another new Jacksonville "Weekend Warrior." Jimmy attends the Boles Military Academy in Jacksonville, and his father is CO of FAir Wing 11, based at NAS JAX. Cdr. W. R. Bartlett, NARTU CO, and Mrs. Young were the witnesses.

Eight Sons Wear Uniforms

Brothers Serve in Army, Navy, AF

Eight of the nine Healy brothers from Williamsville, Mo., are serving with units of the Armed Forces.

The fourth son of the family, Leonard, is the only son in civilian life. He, however, is an ex-Merchant Marine.

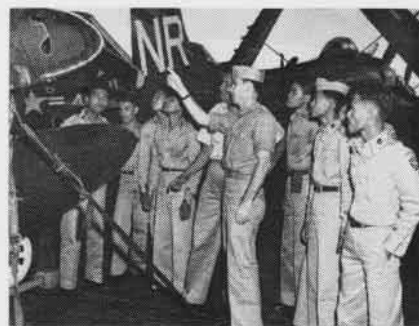
First to enter the service were Wilson and Clifford, who joined the Navy in 1938. Wilson switched to the Air Force ten years later and is a technical sergeant now. Clifford continued his naval career and is now a chief teleman. Brother Elbert, who entered the Navy in 1942, is also a Chief Teleman.

Stanley donned a white hat in 1944, and Edgar followed him two years later. Both are radarmen first class. Edgar is presently serving with Marigold Radar Station in Hawaii.

Harvey, eldest of the brothers, is serving with the U. S. Army as a sergeant first class, and the youngest, James, entered the Army last year.

Joseph joined the Navy in 1950, and has gained the rating of electrician's mate second class.

Main ambition of the proud parents of the boys, Mr. and Mrs. T. B. Healy, is to have all the boys home on leave simultaneously for a family reunion.



AIR ROTC cadets from the Faeti Institute of Technology, Manila, P. I., are shown points of interest on the flight deck of the carrier USS Yorktown by Lt. D. E. Haugh.



KAREN Sharpe could be classed as a "cutie on a Cutlass" in this pose during tour of NAS Moffett Field, VC-3's Ltjg. Fry is lucky guy. Miss Sharpe was at the station to celebrate a special occasion. She played a role in the popular movie, "The High and Mighty."



FRAMED in a window of the bridge of the USS Valley Forge, a helicopter stands by for white flag—take-off signal—from primary Fly.

New Barracks for Marines Women Now Live in New 'Home'

Women Marines at MCAS KANEHOE BAY, Hawaii, have the comforts that really allow them the much talked of "home away from home."

The new WM barracks at the air station were recently completed at a cost of \$215,000 and released to the detachment by Navy Cdr. J. Henry Etter, Jr., resident officer-in-charge of construction. Dedication ceremonies were conducted by Col. Julia Hamblet, director of Women Marines, during her tour of Island installations.

The dormitories—three of them—will accommodate up to 150 Lady Leathernecks. Each is divided into cubicles which offer private quarters for two women. Instead of the normal service colors, the cubicles, lounges, kitchenette and writing room are decorated in soft pastels. Beds and lockers also are in pastel shades and large floor areas in each of the dormitories have been developed into comfortable living rooms.

One of the most appreciated installations and perhaps the greatest step-saver is a telephone system with intercom connections on all floors.

The Women Marines have a view that is as old as the Islands themselves. From the window of their barracks, they can look out over Kaneohe Bay to the world famous Nuuanu Pali, where Kamehameha I drove his enemies over the cliff and became first monarch of all the Hawaiian Islands.

One Engine CVA Landing Adm. Lee Lauds Lt. Quinn's S2F Feat

RAdm. Fitzhugh Lee, ComCarDiv 14, witnessed an outstanding feat recently—the successful landing aboard a carrier of a multi-engine prop-driven aircraft with but one engine turning.

The incident occurred when pilots from VS-26 were flying convoy cover from the USS *Antietam* during Fleet exercises in the Atlantic.

Lt. H. T. Quinn, Jr., with his crew, was launched from the *Antietam* as a routine part of the exercise. While he was airborne in the Grumman S2F *Sentinel*, one engine developed trouble and he immediately requested instructions from the ship.

He was given a choice, to land aboard or head for home 300 miles away. Quinn's reaction was, "With my

port engine dead and less than three and a half hours of fuel left, I wanted to stay near people."

The approach was made and when the "cut" signal was given by *Antietam's* LSO, he chopped throttle and made a normal landing.

He's an old Berlin Airlifter with 78 carrier landings to his credit, 12 of which were executed at night. Now it's 13, for this latest was made at 0300. VS-26, commanded by Cdr. C. A. Shipman, is based at NAS Norfolk.

Stevens Family Reunited Both Parents Suffered Polio Attack

Christmas was an especially happy occasion for Lt. and Mrs. Benjamin C. Stevens. Their family was together.

The Stevens were both stricken with polio last July when Lt. Stevens, an officer in the Medical Corps, was at Pensacola. They had to give up their children to the care of friends, Lt. and Mrs. G. Drago.

Drago was a flight student soon to be transferred to Corpus Christi for advanced training. The Stevens consented to let the Dragos take the children with them to Texas.

When Drago was assigned to fleet duty, it was necessary for the children to rejoin their family. The children were flown from Texas to NAAS SAUFLEY FIELD. Stevens and his wife were on hand for the reunion. With them came their new baby brother, Stewart, born while his mother was recovering.

Canadians Serve in VS-26 13 Learn Antisubmarine Tactics

The first group of Royal Canadian Navy men to be trained in the operation, maintenance and upkeep of the S2F *Sentinel* are now assigned to VS-26 for indoctrination. The three officers and 10 enlisted men are being trained in advance of adopting the Grumman hunter/killer craft for ASW.

Participating in Operation LantFlex, the Canadians chalked up a couple of "firsts" for themselves. LCdr. H. J. Bird was first Canadian to land the S2F aboard an American aircraft carrier. LCdr. R. L. Hughes had the honor of making the 11,000th arrested landing on the canted deck of the *Antietam*.

Reports are that the Canadians are enjoying themselves, but they have one gripe—no customary rum ration.



COMPRESSED air from this small portable hand gasoline engine furnishes power for starting.



SMALL in structure but mighty in power, the Navy's HOE-1 ramjet powered helicopter sits on company's proving grounds at Palo Alto, Calif., awaiting demonstration trials for Navy officials.

MIGHTY MIDGET OF THE HELICOPTER FAMILY

THE FIRST CAA certified jet helicopter of any type is being purchased by the Navy. Designated the HOE-1, the Hiller *Hornet*, as company officials call it, recently made its first flight at the company's plant at Palo Alto, Calif.

The ramjets, mounted on the tips of the 23-foot rotor blades, have no moving parts, so engine changes can be effected with a minimum of tools. The mighty midget—its engines weigh less than 11 pounds each—can lift more than its own weight.

Cdr. Bill Knapp of BUAE's Plans Coordination Division, holds the first

helicopter ticket issued by the Navy. After flying the HOE-1, he had nothing but praise for the bantam's capabilities. "It is about as complicated as a ball point pen," he said.

Knapp checked out in three minutes after briefing by a company test pilot.

In the event of a flame-out, the engine re-starts on a continuous ignition system without action on the part of the pilot. The rotary wing performs well in autorotation which allows the craft to be brought down gently.

Delivery of the first three helicopters for the Navy and the Marines is expected this month for service test.



CDR. E. F. HAYES, CO of HU-1, looks over the 11-pound ramjet engine held by M. Metcalf.



INFLIGHT, the HOE-1 puts on a demonstration for Navy officials at Palo Alto, Calif. This bantam helicopter carries twice its weight.



A HILLER mechanic and inspector check HOE-1's ramjet engine just before the takeoff for the flight demonstration of the new 'copter.



COURSE IS GIVEN AT UNIVERSITY OF SOUTHERN CALIFORNIA



DOHENY LIBRARY FACILITIES ARE USED BY SAFETY STUDENTS

AVIATION ACCIDENT PREVENTERS CUM LAUDE

THE FIRST class of professionally trained Naval Aviation safety officers reported back to their commands last month after completing an intensive eight-weeks course at the University of Southern California. This class of 15 officers attended the course on TAD orders and came from the staffs of ComAirLant, ComAirPac, CNATRA, the Naval Aviation Safety Activity, and selected Marine units.

These graduates will bring the latest techniques and information on accident prevention into play at supervisory levels in the chain of command. Future classes are planned to provide trained aviation safety officers for each squadron. The importance which the Navy attaches to this course was emphasized by VAdm. H. M. Martin, ComAirPac, who spoke at the graduation luncheon.

Pioneered by the United States Air Force, the University of Southern California, provides an excellent location for

the school, owing to, in a great measure, the availability of aviation specialists, facilities such as the human centrifuge and its location in the heart of the aircraft manufacturing industry.

Prospective students who envisage a chance to bask in the sun and talk to the co-eds are in for a somewhat rude awakening. A glance at the scheduled classroom hours of instruction shows why:

Aeronautical Engineering	89 hours
Accident Prevention and Investigation	88 hours
Aviation Physiology	24 hours
Aviation Psychology	30 hours
Educational Principles and Methods	30 hours

In addition 22 hours are devoted to field trips and individual indoctrination in the human centrifuge, bringing the total hours of instruction to 283. Ten university credits are awarded upon successful graduation.

The course in Aeronautical Engineering, under the guidance of Mr. Harry H. Hurt, is rated the most difficult of the subjects and keeps most students burning a little midnight oil. It starts off easily enough with a brief review of algebra, physics and trigonometry, rapidly gets into the theory of flight, high speed aerodynamics, stability and control problems, and concludes with a study of the strength of metals and aircraft structures. At this point, the

class moves to the engineering lab where huge testing machines demonstrate the strength of various metals and the types of breaks and failures that may be encountered.

STUDENTS become familiar with such phenomena as Mach effects, critical Mach and the effects of sweep-back on compressibility during the portion of the course devoted to high speed aerodynamics. With the rapid conversion to jet types, this course is one which is of value to all pilots who hope to live long enough to enjoy retirement.

In the course in Aircraft Accident Prevention and Investigation, the student learns what type of equipment he will need in his investigator's kit, and much attention is devoted to the formulation of a "pre-accident plan." The importance of accurate and thorough reporting of accident findings is stressed, and time is devoted to a detailed study of the "bible" for accident reporting procedures, OpNav Instruction 3750.6A.

Mr. F. G. Andrews, the instructor in Accident Investigation, knows whereof he speaks, having been employed for many years by the Civil Aeronautics Board and the Air Force in the actual investigation of aircraft crashes.

The techniques used in conducting an effective aircraft accident prevention program are taught by Mr. Blake Lanum, formerly with the USAF Directorate of Flight Safety Research, and



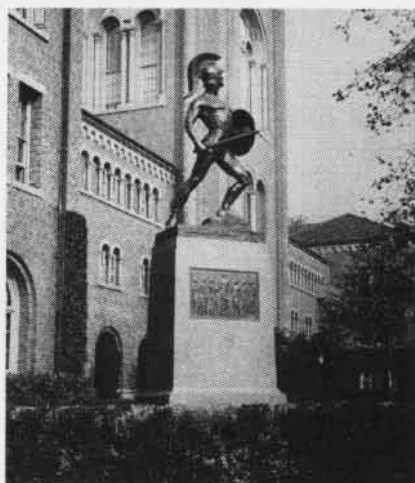
INSTRUCTOR HURT ILLUSTRATES A POINT

by Dr. Louis Kaplan, the University's Aviation Safety Training Coordinator.

Recognizing that knowledge on the part of the safety officer will do little good unless he possesses the ability to get this information across to his squadron mates, planners of the program include a course in Educational Principles and Methods. This covers such matters as public speaking, publications, publicity, graphic arts, and the use of visual aids and other training devices. Students form teams to demonstrate a variety of methods used in conducting stimulating safety meetings.

At one time many pilots considered the fields of Aviation Psychology and Physiology the exclusive domain of the flight surgeon. However, the problems studied in these two fields are becoming of daily interest to many pilots as they find themselves asked to operate in an almost completely artificial environment. "There I was flat on my back at 40,000 feet" used to be just a figure of speech to most pilots. Now almost every graduate of Pensacola can look forward to flying at speeds greater than sound and at altitudes where he is entirely dependent upon the correct functioning of the special equipment designed to allow him to think and act normally in a strange environment.

IN THE courses at USC, the student is introduced to many of the important contributions made recently in the fields of Aviation Medicine. Students learn more about the effects of "G"s than they ever knew before—from actually whirling around in the human centrifuge. After determining the "G" levels at which they will grey-out and black-out without protective equipment,



TROJAN WARRIOR FRONTS AD BUILDING

the students each ride the centrifuge once more utilizing the latest "G" suits.

Since Dr. C. I. Barron who conducts the course in Aviation Physiology is a former Navy flight surgeon, he is well equipped to talk to pilots on the problems which they will encounter in trying to adapt themselves to the constantly changing environment of high speed, high altitude flight.

Dr. Neil Warren, another former flight surgeon, and a participant in many research projects, instructs in the field of Aviation Psychology. Dr. Warren is now engaged in a project to determine an accurate index of accident exposure. It has long been recognized that the hazards of flying vary greatly depending on type of duty assignment, type of equipment, and conditions of flight. It is hoped that a scoring method with weights assigned to varying types of flying can be developed. Such a system could be used to determine

relative standings of squadrons competing for safety awards.

In the future, most students ordered to the Aviation Safety Officers' Course will receive this instruction enroute to new duty assignments. Naval aviators scheduled for a change of duty in the near future who wish to apply for the course at USC should submit an Officers' Data Card (NavPers-340) in triplicate as early as possible. One of these copies is received in the Aviation Detail Office (OP-54) of the Office of the Chief of Naval Operations.



SAFETY COURSE IS HELD IN THIS EDIFICE

Approximately 70% of the remaining assignments for this fiscal year will be given to aviators enroute to new sea duty assignments. Most of those selected will be in the ranks of lieutenant and lieutenant commander. However, some staff billets will be filled by more senior graduates of the course, and applications will be welcomed from all ranks of lieutenant or above.



HERE DR. C. I. BARRON LECTURES ON AVIATION PHYSIOLOGY

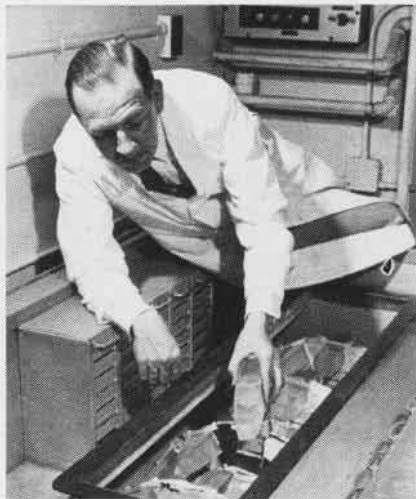


SAFETY OFFICERS COME FROM ACTIVITIES ALL OVER THE COUNTRY

NAVY'S CRYSTAL RESEARCH AIDS DEFENSE



CRYSTALS GROW LIKE CUBES IN ICE TRAY



SUB DETECTION CRYSTALS ARE GROWN HERE



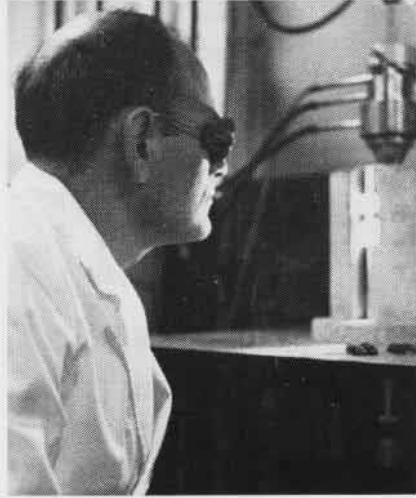
SOME CRYSTALS GROW IN 600°F. SOLUTIONS



TRANSISTOR CRYSTALS ARE MADE BY ICING



MELT PROCESS FORMS GERMANIUM CRYSTAL



SYNTHETIC SAPPHIRE GROWS UNDER 3000°F.

ALMOST ANY phase of our modern civilization, including National Defense, is dependent on the unique properties of crystals of the kind first discovered in laboratories devoted to fundamental research, such as the Naval Research Laboratory.

The color of paint, the power of many explosives, the strength of materials—all are controlled by their crystalline properties. Crystal research has led to discoveries useful in peace and war: hearing aids and gun sights, apparatus for locating fish and submarines, instruments for seeing at night, and improved picture tubes for television sets.

There are still other results of crystal research: light meters for photographers; instruments for measuring atomic radiations; equipment for testing the quality of gasoline; improvements in telephonic apparatus; fluorescent lighting and jewels for watches, and many more.

Crystal study is one of the research and development programs at NRL. In this program, chemists are concerned with why crystals form in the geometrical shapes they do, and with efforts to improve on nature's growth in the lab. Crystals grow as a community grows—by adding parts—or more directly, as icicles grow on a roof or stalactites in a cave.

Some materials can be dissolved in water or other liquid and grown from the resulting solution by heating and subsequent cooling. Other materials do not dissolve at ordinary temperatures, but must be raised to temperatures of from 500 to 1,000 degrees. Another class of materials may be crystallized by carefully cooling the melted material, like freezing ice cubes in a refrigerator. Still others are grown from materials that neither melt nor dissolve. In this case, the crystals form from the vapor in much the same way that frost crystals form on a window pane.

Physicists at NRL are concerned with the amazing way crystals behave when subjected to heat, light, pressure, electricity and other forms of energy. The uniqueness of crystal properties depends on the orderly internal arrangement of their atomic structure. Liquids, gases, and many

solids such as glass and plastics are made up of atoms and molecules arranged in a helter-skelter fashion. The units that form crystals are arranged as orderly layers in various symmetrical patterns. Energy such as heat, light and electricity can thus pass through the crystals more easily in some directions than in others.

OFTEN the effects of two influences are combined, as in crystals which conduct electricity more readily when light shines on them. This property is made use of in photo-electric cells and light meters. The same method is used to measure invisible radiations—infra-red, ultra-violet, and atomic.

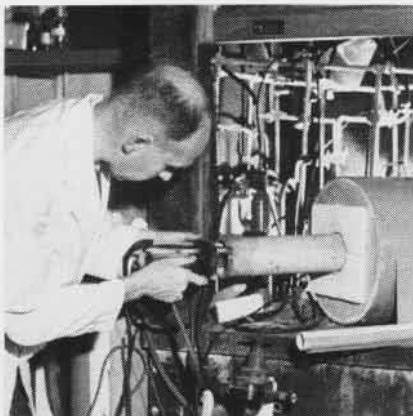
One of the most interesting properties of crystals is the pressure effect. When certain crystals are subjected to pressure, an electric charge develops on their surfaces. Conversely, an electric charge on the surface actually causes the crystal to change its shape.

Even the slight pressure of sound waves can be detected and amplified. One of the common crystals which exhibits this effect is sugar, so that one can honestly say that dinner-table conversation is electrifying. The sound of voices over the sugarbowl generates millions of volts. Of course, the current is so low that nobody gets shocked.

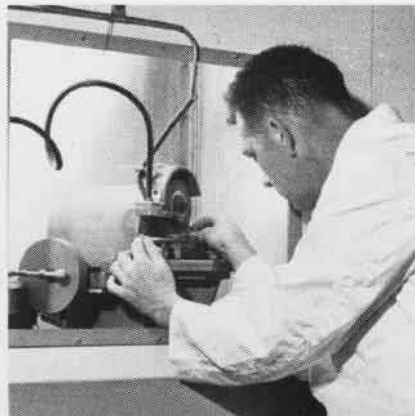
Conversely, alternating electrical current can be converted to sound waves. On these facts have been built the sound recording industry, submarine detection, and the control of radio broadcasts to their assigned spot on the dial.

The most spectacular property of crystals is their luminescence. Television screens, fluorescent lights, and watch dials that glow in the dark, are all made of layers of tiny crystals. What the crystals do in every case is to convert invisible energy to "cold" light, which we can see. Waves of energy such as ultra-violet light, electron beams, and X-rays travel in waves too fast to be visible, but when they strike a crystal, the energy comes out as slower waves of visible light. This is like shooting a rifle at a rock; the bullet is invisible, but the fragments that spatter usually are seen.

In many fields, particularly the highly technical ones, the Crystal Branch, Naval Research Laboratory, is playing an important role in the Defense Department's research and development program so vital to the future of the national defense of the United States.



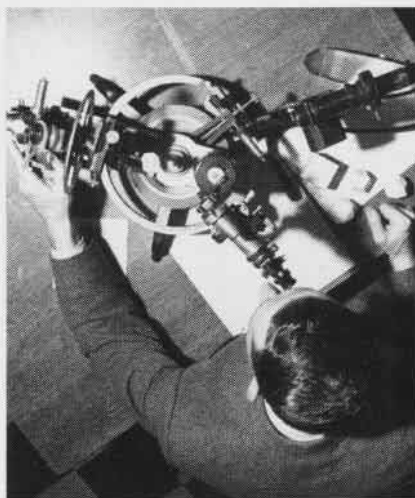
SOME CRYSTALS MUST BE GROWN BY VAPOR



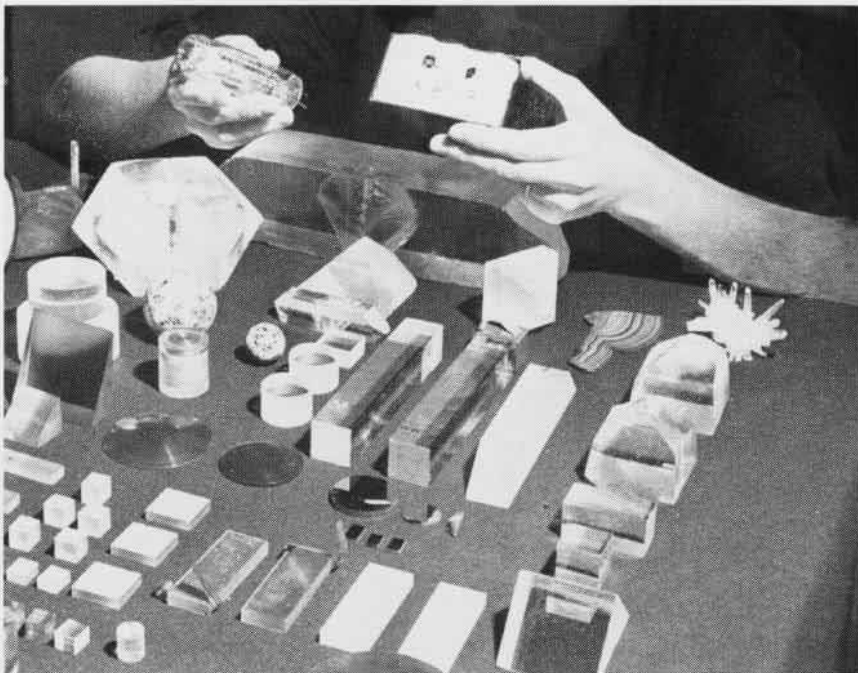
DIAMOND SAW CUTS CRYSTALS ACCURATELY



OPTICAL CRYSTALS NEED SPECIAL POLISH



MEASURING ATOMS OF CRYSTALS BY ANGLES



THESE ARE BUT A FEW OF THE MANY SHAPES AND SIZES OF CRYSTALS MADE FOR PROGRESS

FALLON OPENS SHANGRI-LA VILLAGE

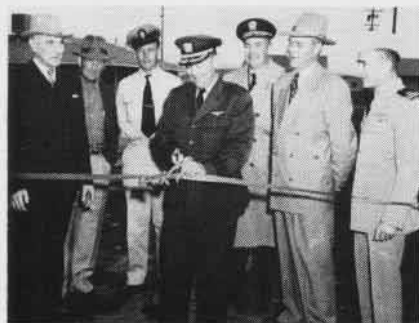


AERIAL VIEW OF VILLAGE LOOKS LIKE SCALE MODEL PLAN OF REALTOR SUB-DIVISION

A SNIP of the scissors at a ribbon-cutting ceremony recently opened the doors of 50 PHA Title III houses for personnel attached to NAAS FALLON, Nevada. Virtually isolated, this "biggest little air station in the world," has had a critical problem in dependent housing. An oft-repeated term, "the Navy takes care of its own," was graphically illustrated by the opening of "Shangri-la Village."

Commanding Officer of NAAS FALLON, Cdr. H. E. Cook, Jr., instigated the movement of the relocatable-type houses from neighboring Naval Ammunition Depot, Hawthorne, and carried through the project to its completion. Actual moving was done by the McKenzie Construction Company of Reno, and included 33 two-bedroom houses and 17 three-bedroom houses, 30 of which are furnished. The project was humorously called "The movement of the mountain to Mohammed."

Shown in the picture at lower left



CDR. COOK CUTS RIBBON DURING CEREMONY

are left to right: John W. Merrill, Chief Inspector for PHA from San Francisco; Pat Mulligan, PHA Project Engineer; F. F. Marzolf, HMC, Manager; Cdr. Cook; Cdr. S. R. Holm, station XO; E. W. McKenzie, Contractor; and Lt. E. D. Anderson, Public Works Officer.

For the convenience of the children who will be living in the village, there is a small playground, which includes a wading pool, basketball court, slides, vertical bars and plenty of room to romp.

The playground is next to a day nursery which will be operated by the wives of servicemen residing in the housing area. It's truly Shangri-la.



QUICK-thinking Robert Spicer, RCN, on TAD with VS-26, saved this S2F Sentinel from possible strike damage when he applied brakes as elevator started down. This freak accident occurred on board USS Antietam.

ATU-101 Wins Aces Award Third Consecutive Award to Unit

Advanced Training Unit 101 at NAAS CABANISS FIELD has been awarded the CNAVANTRA Aces safety award for the third consecutive month.

Cdr. C. D. Fonvielle, OinC, accepted the award for the unit from Capt. E. R. Eastwood, CO, Cabaniss Field. RAdm. C. D. Glover, CNAVANTRA, praised the unit for its achievement.

The unit completed training 194 students although they were in transition from the F6F type aircraft to the new T-28B trainer. This was done without interrupting the student syllabus.

Of the 8,264 hours flown by ATU-101 during November, 6,482 were student training hours. The peak load fell in late September and October when instructors were doing double-duty training students in F6F's and going through an instructor's syllabus in the T-28B.

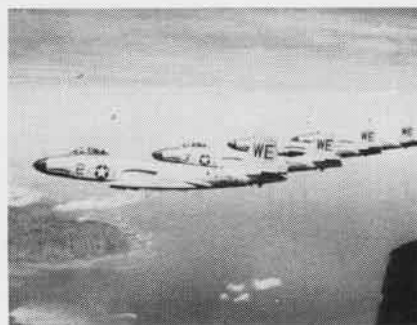
Cabaniss Field can win only two awards in one month. This was done in November when ATU-101 and ATU-301 both won the coveted Aces award.

Last Trainer From Downey T-28B's Built At Columbus Plant

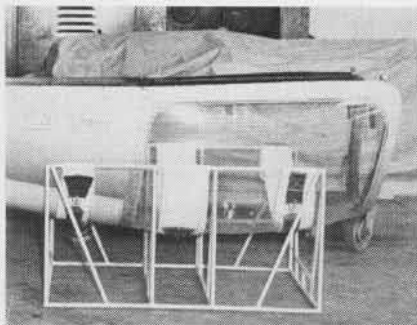
Lt. Carl H. Klindworth of VR-32 has accepted the last T-28B trainer to be manufactured at North American's Downey, Calif. plant.

The basic trainer is now being produced at the Columbus plant, and the first one rolled off the production line just before Christmas.

Movement of the program from Downey to Columbus was made to provide added space for the company's long-range guided missile program which is already in progress.



BANSHEE jets of the 1st Provisional Marine Air-Ground Task Force's "Black Sheep" Squadron practice formation flying off Oahu.



CANOPY CRADLE HOLDS CUTLASS CANOPY

Canopy Stowed in Cradle

Since present fighter canopies are much more bulky, delicate and expensive than their predecessors, Lt. L. O. Campbell and the airframes division at NOTS INYOKERN have designed and built special cradles. These are used regularly as the canopies are removed and stowed during maintenance checks. The cradle eliminates the danger of damage to the canopy.

Use of the cradle is not limited to air stations. It could be used aboard ship. With slight variation in design, the device can be made collapsible to save stowage space.

New Regular Fires Score

VF-192's Ltjg. T. L. Lane really celebrated his acceptance as a regular officer in the Navy.

The day after he received word that his request for transfer from USNR to USN status had been approved, he took off on a weapons development flight at NAAS FALLON and fired a triple "E" in air-to-ground competition.

Flying an F9F-5 *Pantherjet*, Lane's scores were: 21 feet in rockets, 18 feet in bombs, and 19% in strafing runs.

New Oil Strainer Cleaner

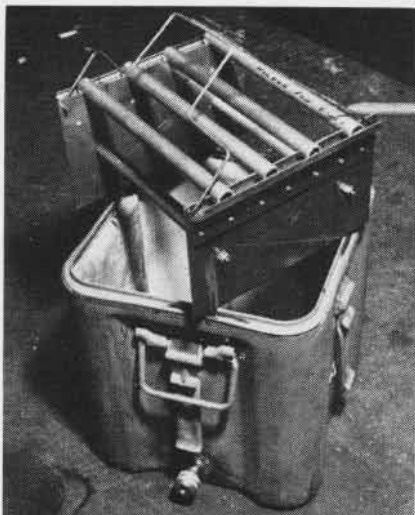
VS-26 has made a new tank for cleaning disc type oil strainers used on R-1820-82 Wright engines in S2F-1 aircraft. BUAER says that the procedure can be applied to disc type screens used in R-3350 and other model engines.

The tank was designed by the squadron engineering division since improperly cleaned strainers had caused a drop in oil pressure after approximately 20 to 25 hours of operating time. Thus planes had been downed for cleaning before the regular 30-hour check.

The container is approximately one

foot square. Materials such as a quick-disconnect air fitting, two types of aluminum and steel tubing, and special rods for handling are used.

Strainers are mounted on tubes, and the rack is lowered into the container two-thirds filled with cleaning fluid.



DISC HOLDER SHOWN ATOP CLEANING TANK

VAdm. Martin Lauds VP-57

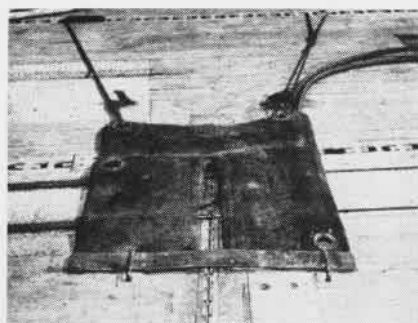
VP-57 has been commended by VAdm. H. M. Martin, ComAirPac, for its performance during its deployment to the Far East.

This is the unit's second tour in West-Pac and, during this time, they flew over 15,000,000 air crewman miles or about 600 times around the world using 12 *Neptune* patrol bombers.

The unit was commanded by Cdr. J. P. Edwards during this second deployment to Okinawa. Present commanding officer is Cdr. C. N. Shane.



P5M MARLINS from VP-56, an anti-submarine warfare unit based at NAS Norfolk, played an active role in the search for the overdue LST type freighter, Southern Districts. The 3,357-ton craft left Port Sulphur, La., in early December and was due at Bucksport, Me., nine days later. Although 40,000 square miles of ocean were searched, no trace of the vessel has ever been found.



USS RENDOVA USES NEW RUBBER DEFLECTOR

New Hook Deflector Plate

Several reports have been received from CVE-105-class vessels which indicate that the deflector plate design described in Arresting Gear Bulletin No. 48, is unsatisfactory.

Illustration shows an installation designed by the USS *Rendova* (CVE-114) as a replacement for the metal type deflector specified in Bulletin No. 48. The deflector was made from a self-sealing gasoline tank, and has proved satisfactory during operations, particularly when catapulting AF type aircraft.

Since BUAER does not plan to re-issue #48 at this time, and since use of this thick rubber matting appears to have merit over the metal types now used, it is recommended that the rubber deflector be made and installed by all escort carriers.

- VF-44 deployed aboard the USS *Intrepid* in *Banshee* jets recently began carrier qualifications for the first time as a jet squadron. Cdr. C. A. Crow is squadron CO.

- More than 4,000 subcontractors work for a major aircraft engine manufacturer in building the 8,854 parts for new jet engine.

AIR FORCE DISPLAYS THE VOODOO

Lear Indicator for Demon New Gear Will Be Installed Soon

McDonnell Aircraft Corporation is installing a Lear pictorial attitude system in the Navy's all-weather fighter, the McDonnell F3-H *Demon*. Initial deliveries have already been made. The installation in the McDonnell *Demon* for the Navy marks the first military application of a pictorial type attitude reference instrument, according to Lear Incorporated, the manufacturer.

Sonic speeds of jet aircraft have reduced the pilot's margin for error in attitude interpretation to practically zero. According to Lear, the new indicator, by visually simulating the earth and sky in relationship to the aircraft, allows nearly instantaneous interpretation of attitude by the pilot. More accurate attitude information for precision instrument flight and combat missions is also provided with climb-or-dive and bank angles easily read to within one degree on an expanded scale presentation.

Pitch and roll attitude displacements are indicated on the pictorial indicator by motions of a universally mounted sphere displayed as a background for a miniature reference airplane. The horizon is represented on the sphere as a solid line, with the sky indicated by a light blue-grey area above the horizon line, and the earth by a dull black below the horizon line. Horizontal markings of five-degree separation on the face of the sphere indicate airplane attitudes up to 85° of climb or dive.

In the steep landing and take-off attitudes characteristics of the F3-H and other high-performance jet aircraft, the horizon reference of conventional "artificial horizon type" instruments is displaced to the extent that it becomes difficult to interpret as a flight reference.

With the Lear system the pilot may adjust electrically the position of the simulated horizon to realign it with the miniature airplane reference during extended periods of extreme nose-up or nose-down attitude. With the horizon reference so displaced, the pilot may detect attitude variations to the nearest degree during steep-angle take-offs, landings, climbs or dives.

● *Contributions of the Military Engineer to Sea Power* is theme of exhibition open to the public at the Truxtun-Decatur Naval Museum located at 1610 H St. NW, Washington, D.C.



VOODOO INTERCEPTOR FIGHTER HAS DEMONSTRATED ITS SPECIAL POWERS TO PRESS

McDONNELL Aircraft Company and the U.S. Air Force took the wraps off the new F-101 fighter-interceptor recently and released the picture of the supersonic plane (above) after a press demonstration of its special capabilities.

The F-101 nicknamed *Voodoo*, was developed by the Air Force to meet its requirements for a long-range fighter. The F-101 is scheduled to be assigned to the Strategic Air Command. Its speed is in the supersonic class, and it is capable of carrying atomic weapons. It can be adapted for photo-reconnaissance missions.

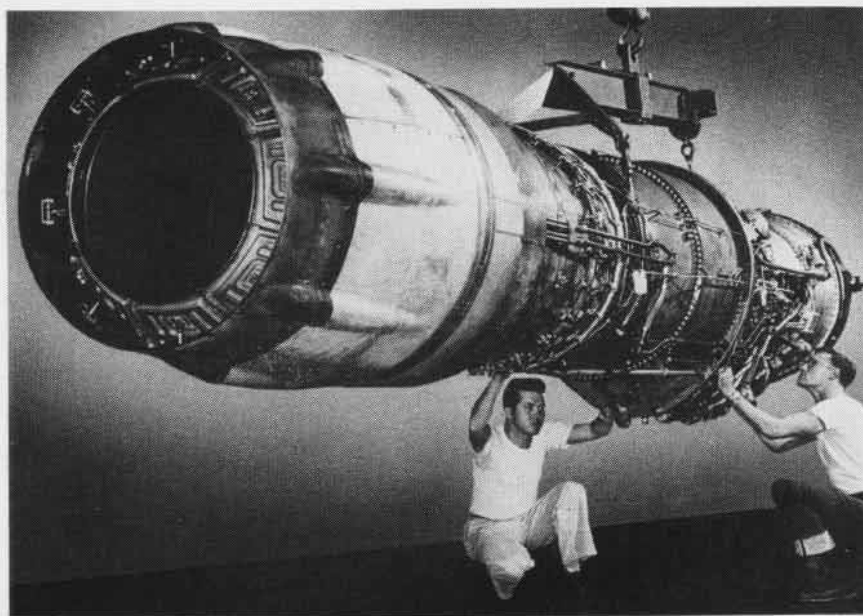
Two Pratt and Whitney J-57 turbojets with afterburners power the

Voodoo. The power of the J-57 engine, which is in the 10,000-pound thrust class, is increased tremendously by an afterburner.

The P&WA engine model, J-57-P-13, for the F-101 has an afterburner shorter by about two feet than other J-57 afterburners produced by P&WA. The short afterburner was developed under an Air Force contract.

A production model of the Navy's J-57-powered *Skywarrior* spanned the continent last year in a little over three hours during its delivery to Naval Air Test Center, Patuxent River, Maryland.

● A Modern supersonic research plane carries more than half a ton of instrumentation to help solve stratosphere flight problems.



'SHORT' AFTERBURNER EXHAUST END OF ENGINE FOR VOODOO IS SHOWN ABOVE AT LEFT

NAVY FILMS

IBM'S PUSH-BUTTON BRAIN FOR BUORD



NORC IS A MATHEMATICIAN'S DREAM FOR IT SOLVES THE MOST DIFFICULT PROBLEMS

Navy No.	Title
MN-7332d	ASQ-8 Magnetic Airborne Detection Equipment—Compensating for Permanent Magnetism
MN-7897a	Airborne Signal Analyzing Equipment—Calibration and Recognition of Emission
FN-7965	Using the G-3 autopilot
FN-7966	Operational Use of Periscopic Sextant
MN-7967	GCA—Using the AN/CPN-4 and MPN-5 Equipment
MN-7984A	ABC Warfare Defense Ashore—Introduction
MN-7984B	ABC Warfare Defense Ashore—Protective Shelters
MN-7984C	Detection of Contaminated Areas in BC Warfare
MN-7984D	Protective Clothing for Decontamination Personnel
MN-7984E	Biological Warfare: Decontamination Personnel
MN-7984F	Biological Warfare Decontamination of Interiors
MN-7984G	Biological and Chemical Warfare Decontamination of Exteriors
MN-7984H	Biological Warfare: Decontamination of Personal Equipment
MN-7984I	Chemical Warfare: Decontamination of Personnel
FN-8016A	Basic Electricity—The Electron Theory
MN-8039	Compressibility Effects on Jet Aircraft
FN-8040A,B	Hamilton Hydromatic Reversing Type Propeller A. Theory of Operation B. Assembly and Disassembly
MN-8046A, B, C & D	F7U-3 Cutlass—Familiarization A. Aircraft Systems B. Emergency Systems and Procedures C. Before Flight D. Flight Operations
MN-9229	Naval Aviation and You
FN-9230	Characteristics and Features of the Engine Analyzer
MN-9272	Carrier Action Off Korea
MN-9313	Emergency Escape Using Ejection Seat

Film libraries at air stations and centers furnish films needed by aviation activities.

THE SMARTEST electronic "brain" in existence, according to International Business Machines Corporation who built it, will shortly go into operation for BuORD at the Naval Proving Grounds, Dahlgren, Va.

The big computer, called the NORC, Naval Ordnance Research Calculator, was built by IBM for the Navy. Original research leading to its construction began in 1946 and actual construction and testing have been under way since 1951.

One of the most puzzling problems, involving billions of computations, is that of "cavitation." This involves the size and shape of the cavity or envelope of comparatively empty space that forms around an object moving under water. In the case of an underwater weapon, if the cavity is so big that fin and rudder surfaces do not touch the water, control is lost or impaired and the target is usually missed. If the cavity is small enough so that steering surfaces engage the water, control is maintained.

The mathematics of the cavitation problem have been known, but the solution was beyond the practical capacity of existing computers. NORC is now expected to obtain solutions within practicable time limits.

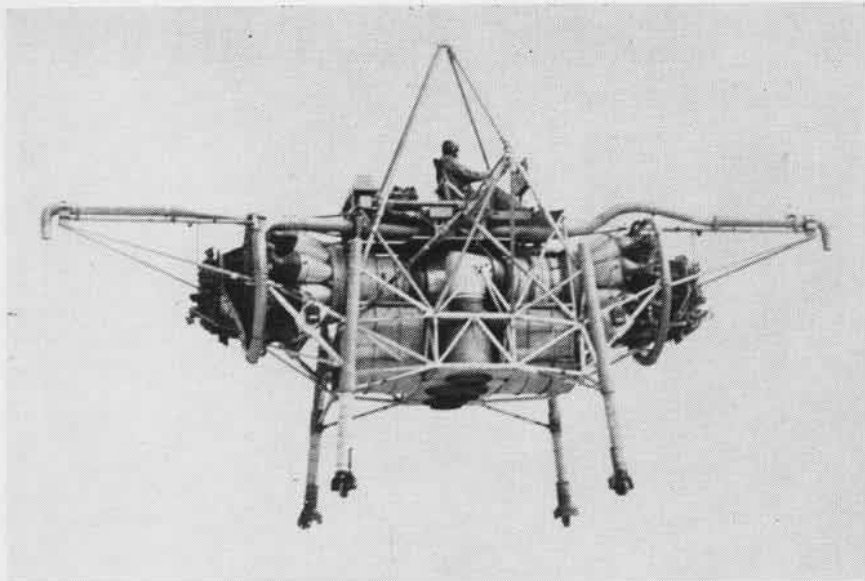
Eight magnetic tape units were specially designed and built to provide a continuous flow of numerical data into the machine and permit the solution to extremely difficult and large computations. These tape units throw information at NORC at the rate of 70,000 decimal digits a second.

Numbers stored in the machine's cathode ray tube memory can be recalled from any one of 2,000 locations in eight millionths of a second.

NORC can produce the answer for addition, subtraction, or multiplication as fast as it can read the numbers—one million digits a second. It can carry out 15,000 complete arithmetic calculations a second.

In forming its arithmetic calculations, each one of the operations involves several steps—obtaining the specified numbers from input or storage (memory), performing the calculation, placing the decimal point, checking the answer, and storing the results as directed. To obtain similar results in many of the earlier machines, 30 separate instructions were necessary.

Complete arithmetic operations are carried out at a rate of 15,000 a second or a billion in less than a 24-hour day. This is equivalent to 1,000 people computing for an entire lifetime.



THIS IS not a plumber's nightmare, but "the Flying Bedstead," Britain's latest flying machine. It has no wings or rotors, can take off vertically from horizontal position. It is powered by two Rolls-Royce turbojet engines, ducted through 90 degrees so that both discharge vertically downwards under center of gravity. Control is supplied by adjustable compressed air jets which are discharged through nozzles at the ends of horizontal cross arms above engines.

English Jet Hits Mach 1 Prototype Midge Powered by Viper

The *Viper*-powered Folland *Midge* has crashed through the sound barrier twice in one day during shallow dives.

Piloted by Squadron Leader E. A. Tennant, the *Midge* is the prototype of the *Gnat*, a lightweight fighter, which will be powered by the Bristol *Orpheus* engine.

The *Viper* engine produces but 1,640 pounds thrust which makes the *Midge's* achievement noteworthy.

In level flight the *Midge* can exceed 600 mph and weighs a mere 4,000 pounds. The *Gnat* is being designed as a fighter-bomber or interceptor.

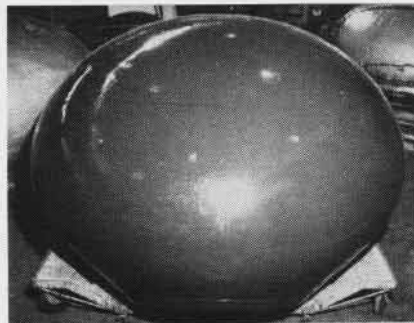
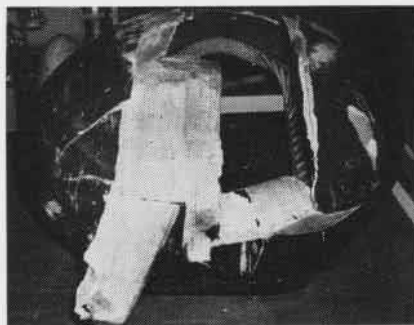
Gold Coating for De-icing

British aircraft constructors are trying out a new type of safety-glass which incorporates a conductor made of gold film. The gold film is transparent, and when used for an aircraft wind-screen, it is claimed that the new glass will require a lower voltage for de-icing purposes than any other known material.

The gold film is less than one-millionth of an inch thick. First it is applied to toughened glass, and then the glass is laminated to any required thickness, with the film on the inner surface of one of the outer glasses of the lamination. Next, the panels of gold-coated

glass are made into a complete aircraft windshield together with the necessary control equipment.

The first production glass with the gold film conductor will be delivered for test and evaluation very shortly.



BEFORE and after! When the AF2W radome arrived at O&R, NAS Jax, it looked as if it would have to be replaced. Engineers decided the cost warranted a super repair effort. Result: more than \$4,000 was saved.

British Engine Improved Sapphire 7 Has 10,200 lbs. Thrust

The new Armstrong Siddeley *Sapphire 7* engine has been tested at 10,200-pound thrust, according to an announcement by the Hawker Siddeley Group, Ltd. of London. It was undergoing a 150-hour test when this thrust ratio was achieved. This was done without use of an after-burner, re-heat or other thrust boost devices.

Its predecessor, the *Sapphire 6*, is used to power the Hawker *Hunter* interceptor, the Gloster *Javelin* all-weather fighter and the *Victor V*-bomber. It was also used in the *English Electric P. 1* fighter, first British aircraft to fly faster than sound in level flight.

The *Sapphire 6* also powers several U. S. jets under the designation J-65. Curtiss-Wright obtained the U. S. License in 1950 and has produced over 2,000 of the jet turbines.

Weighing almost 3,000 pounds, the engine is 37.4 inches in diameter, 127.6 inches in length. Fuel consumption is 0.885 pounds an hour per pound thrust generated in sea level flight.

Hydraulic Test Bench Made Portable Unit Speeds Maintenance

William H. Tullis, AMI, at NAS BARBER'S POINT has designed and constructed a portable hydraulic test bench. He has received a letter of commendation from Cdr. R. V. Wilhelm, his commanding officer.

The test bench can test pressures up to 4,000 pounds per square inch. Convenient stowage trays contain all the major fittings for hydraulic repairs.

The bench can be utilized in the shop, hangar or aircraft parking area.



J. A. SHELANDER, ADC, of VR-7, at right, is shown with guard rail he invented to enclose baggage access hatch on Super-Constellation. Co-worker Patrick J. Hassett appears with him to demonstrate the new device.

Radio Aids CVA Launching

Miniature Packset Built by Bendix

A unique communication set-up was supplied by the Radio division of Bendix to assist in the launching of the Navy's biggest warship, the *Forrestal*.

Officials at the Newport News Shipbuilding Company never before faced such a launching job. Previous methods of communications, such as hand signals, loudspeakers, and field telephones, were not adequate, because of the tremendous size of the carrier.

Packsets supplied by Bendix Radio were operated by men at three strategic control points: one on the island superstructure of the ship, another on deck, and a third on the dock. They were tuned to the same frequency, as was transmitter-receiver equipment on a dozen tugs, in a tightly knit communications network, to help assure a precise operation.

The dock could not be seen from the edge of the deck, and the shipping gate—which held back the water at the dock entrance—was but 41 inches from the carrier's stern.

Because of her size, the *Forrestal* could not slide down the ways as in conventional launchings. Instead, the carrier was carefully floated as the dry-dock, where she was built, was flooded.

Tower Frequency Replaced

Three Affected in First Change

Of interest to private pilots and aviation clubs of Naval Aviation personnel is the announcement that tower frequencies at LaGuardia, Chicago, and Los Angeles International airports have been replaced.

All three have switched from the



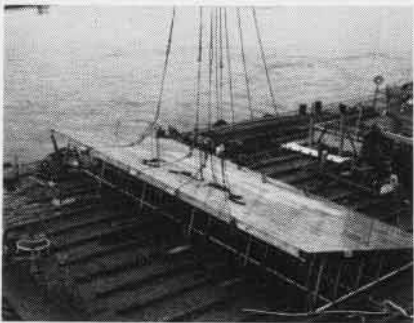
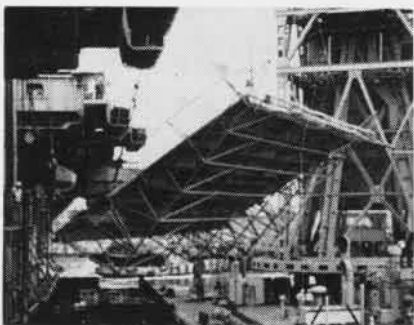
CAPT. W. E. Klein, staff medical officer for ComFAir Jax and **Lt. R. A. Holden**, VR-14's safety officer, inspect the radarman's seat of F3D-2 as **E. Huddle**, PR1, serves as a model. Inspection may result in several modifications which will add to comfort of the operator.



AFTER COMPLETING joint 'scramble' exercises at Yokota AF Base in Japan, aviators from the 41st Fighter Interceptor Squadron were dinner guests of pilots from VF-153, "the Blue Tailed Flies." Flown to the carrier USS *Yorktown* by Marines, the AF pilots' first carrier landings were by helicopter. Commanding Officer of VF-153 is **L. M. Satterfield**; Maj. **DuFresne** of the 41st.

old 122.5 mc. to the new 122.7 mc. The emergency call for the three towers is still 121.5 mc.

The new frequency, set aside years ago for private flying, is now going into use because of the heavily increased radio traffic load on 122.5 mc.



A CHANGE from steel to aluminum deck edge elevators has been accomplished aboard the USS *Princeton* at the Long Beach Naval Shipyard. The old elevators are lowered away (top) as the aluminum elevators (bottom) are made ready for the carrier installation.

Pax River Gets HOK-1

Scheduled for Test and Evaluation

The Navy's first gas turbine-powered helicopter, the Kaman HOK-1, has been flown to NATC PATUXENT RIVER for test and evaluation. Kaman's chief test pilot, **Al Newton**, and crew chief **John Douton** delivered the HOK-1 to the Center in November.

The first successful flight of a gas turbine-powered helicopter was announced in December 1951 with the initial flight at Windsor Locks, Conn.

The early model, K-225, was powered by a Boeing XT-30 gas turbine which was similar in principle to those used to power jet aircraft, but burned lower grades of aviation fuels for economy.

ADIZ Rules to Be Tightened

ADC to Adopt 'Get Tough' Policy

The nation's Air Defense Command is going to tighten restrictions on unidentified airplanes flying into or through its border security areas.

All planes that fly through ADIZ's are watched by radar, and if a plane is unidentified through the established flight plan system, jets are scrambled to intercept and identify the intruder. This is a costly operation; needless when the intruder is friendly.

The changes are expected to come within six months and will be based on the ever-changing requirements of ADC to defend the U. S. against surprise attack by a possible aggressor.

SEA-AIR-RESCUE TEAM AT GITMO ON THE JOB



LT. SPEARS IN FLIGHT SUIT IS WELCOMED BACK AFTER RESCUE



COLEMAN PRACTICES RESCUE PROCEDURES WITH WILLING 'VICTIM'

MAYDAY! MAYDAY! MAYDAY! . . . 40 EARTHQUAKE STARBOARD ENGINE OUT. . . . AIRCRAFT ON FIRE. . . . PILOT LEAVING AIRCRAFT. . . . POSITION 30 MILES OFF NORTH COAST OF CUBA, BEARING 342° FROM BASE.

That frantic alarm promptly sent the Sea-Air-Rescue team at NAS GUANTANAMO BAY, Cuba, into action. ACC/AP Ted L. Coleman abandoned his swirling laundry at the CPO barracks and had his HUP-2 helicopter airborne at 1551, 13 minutes after the emergency transmission had been received by McCalla Field Tower.

On a general heading, the whirlybird flapped past the Sierras del Cristal and beyond, to the choppy waters off Cuba's north coast.

Meanwhile, Cdr. Allan Rothenberg, Operations Officer, and co-pilot Clayton B. Willis ACC/AP manned the station *Albatross*. They also headed for the downed pilot. McCalla Tower, receiving sporadic transmissions from a wingman orbiting his buddy who had effectively carried out his emergency procedures, gave accurate headings and guided the onrushing rescue team. The first sea rescue for the HUP-2 was in progress.

As the UF gained altitude to clear the formidable, cloud-covered mountain ridges of the Sierras del Cristal, the slower helicopter proceeded on a fuel conserving route through narrow passes and jungled valleys. Arriving on station at 1632, the UF, unable to set down in the turbulent waters, joined in the circling vigil over the airman.

The *Albatross* crew directed Chief

Coleman's helicopter via radio to the scene, while the victim of the mishap, Ltjg. Clyde G. Jeffrey prepared to spend the night in his wave-tossed raft. Then he heard an odd slapping sound from behind his back. The whirlybird was coming into position over him.

Chief Coleman descended until salt spray was wetting the belly of the helicopter, a scant five feet above the pitching raft. Bill Lose, AL1, lowered the hydraulic sling as Coleman added power to meet the additional weight of another passenger.

"Are you hurt?" called Lose.

"No, I'm O.K. . . . just wet," answered the fully composed young *Banshee* pilot as he was lifted to the welcome safety of the HUP-2. After a brief stop at a local sugar plantation to transfer the rescued flier to the *Albatross* and to refuel the helicopter, our team returned to base where the Control Tower log read: "1654: Pilot rescued. 1755: UF 7904 aboard station. Rescue completed."

Two months later, Crashboat *Charlie*



LTJG JEFFREY (L) MEETS HIS RESCUERS

I, AVR, joined the "Fishhook Club" when CWO J. A. Hould and his crew pulled 2nd Lt. Frank H. Spears of VMF-122 out of the drink. Lt. Spears experienced a "flameout" fifty miles off the Cuban coast, ditched his FJ2 *Fury* and climbed into his life raft beyond the reach of a few inquisitive sharks circling the area. *Charlie 1*, already underway, sped to the scene. The retrieved pilot felt "forever indebted."

THESE sea rescues for the Gitmo unit represent only a few of the varied mercy operations performed. People stranded in flooded areas have been rescued.

Last spring, after the kidnapping of a wealthy Cuban heir, the U. S. Naval Air Station was asked for assistance. Helicopters and oy were immediately dispatched to search the wilderness mountain slopes where they flushed out the hiding criminals into the hands of the Cuban Army.

The men that comprise this team are combat seasoned veterans, well acquainted with jeopardy and hardships that they must undergo to accomplish these missions. Chief Coleman, Chief Willis and ADC/AP Charles E. Ellis, multi-decorated pilots of various campaigns, form the nucleus of the NAS Sea-Air-Rescue team at Guantanamo Bay, Cuba. They fly anything with blades or wings on the station, from SNB and oy to UF and HUP-2. What's more, they are always ready to go.

by Paul E. Snyder



AVIATION ORDNANCE

Wind Tunnel Is Being Built

North American Aviation, Inc. is building a \$5,000,000 wind tunnel at El Segundo, Calif., to test airplane and missile designs for speeds up to three and one-half times the speed of sound.

It is expected to be one of the nation's largest, privately owned wind tunnels. Large enough to test models up to four feet wide of airplanes and their major sections, the tunnel will provide basic data to guide North American design engineers and will be used for laboratory tests of new airplanes and missiles before they fly.

The tunnel is designed for rapid conversion to speed ranges below, equal and above the speed of sound. The facility's test chamber will be seven feet square and 17 feet long. It will be the nation's largest intermittent, blow-down type wind tunnel, with speeds produced by compressed air rushing from eight steel spheres. Each sphere will be 38 feet in diameter.

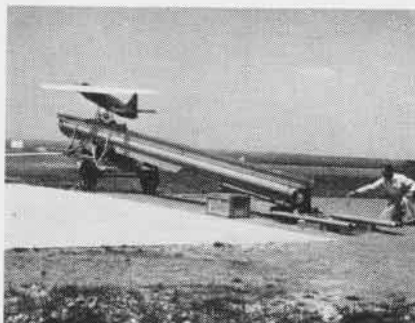
North American expects this trisonic tunnel to be ready in March of 1956.

Target Drone Launcher

When it became evident that the launching requirements of target drone aircraft would soon outstrip the capabilities of the AT-1 catapult, BuAer embarked on a program for the development of a new target drone launcher. A contract was awarded to Van Zelm Associates, Inc. of Baltimore, Md. who, subsequently, designed, manufactured and tested the prototype, XAT-3 catapult.

The AT-3 is basically a compressed air powered, indirect drive single reeve catapult and is capable of launching a 450-pound drone at 90 knots.

Many innovations have been included in the new design. Extensive use of aluminum has kept the weight, including the compressor unit, under 5,000 pounds. The light weight, balance and a self-contained system of brakes and road lights make the unit extremely mobile. The aluminum accumulator serves as a high pressure air reservoir as well as the structural backbone of



XAT-3 TARGET DRONE CATAPULT AT ABERDEEN

the catapult. A unique pre-tensioning device which greatly reduces the shocks of launching, and the air actuated friction brake which stops the launching car at the end of the stroke are innovations.

In addition to deadload calibration shots, a number of drone launchings were made at the Aberdeen Proving Grounds where the XAT-3 replaced temporarily the AT-1 which had been damaged. The catapult proved very successful during all of these launches.

Publications Brief Reports

The Bureau of Ordnance makes good use of its reports of unsatisfactory performance of various kinds of ordnance. It publishes them. One of BuOrd's publications is the quarterly *Rudtorpe Digest*. As its name indicates, it supplies information on torpedoes.

RUDTORPE stands for "reports of unsatisfactory or defective torpedoes or equipment." It describes research, design, development and service activities on deficiencies arising from service use of torpedoes and related equipment.

Any activity which wants to receive a copy regularly of this confidential publication should request the Chief of the Bureau of Ordnance to add its name to the distribution list.

Ordnance facilities concerned with torpedoes should also note that the latest revision of Chapter 60, *Torpedoes and Mines—Preserving, Shipping, and Storing of OP 1105* (first revision) Change 15, has been issued. Copies may be obtained from District Publi-

cations and Printing Office in the district where the facility is located.

Chapter 60 outlines the procedures to be followed in placing torpedoes, mines, and advanced undersea weapons in a condition to resist deterioration while in shipment or storage. This should permit them to be removed from storage and readied for issue without major overhaul and with a minimum of handling.

BuOrd urges all aviation ordnance activities to report on appropriate forms to BuOrd all failures or unsatisfactory operation of equipment. BuOrd needs reports of malfunction so as to take corrective action. Regular reporting of malfunctions is needed if efficient operation is to be achieved.

New Boresight Kit Coming

A new boresight kit for use with 20mm AN-M3 guns, Mk 12 and Mk 16, is to be distributed to the Fleet in April.

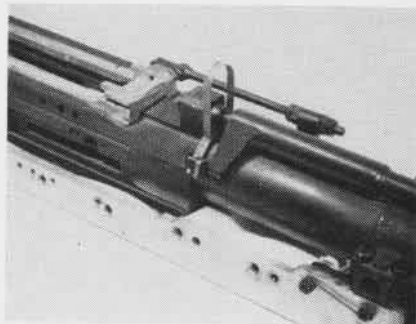
The new kits will differ from the old in that the optical system will provide a better alignment of the bore axis by using two sections: an optical viewer for the bore in the breech and a muzzle cross hair optical adapter in the muzzle.

An extension rod for placing the muzzle adapter in guns with long blast tubes will also be furnished.

Mark 8 Feeders Shortage

The Mk 8 Feed Mechanism for the Mk 16 20-mm aircraft machine gun is in short supply. It is requested that all Fleet activities turn in all mechanisms in excess of allowances.

All shore activities are requested to report quantities on hand direct to BuOrd, Attention Ma 8. The stock numbers of the left- and right-hand feed mechanisms are J941-F-122-350 and J941-F-122-355.



THIS SAFETY device slips over gas cylinder guide of 20mm AN-M3 Mk 12 aircraft gun and holds push rod in an up position, thus preventing bolt from going into battery.

LETTERS

SIRS:

Today in school I saw the December issue of Naval Aviation News. I was hardly able to draw myself away from this extremely interesting publication.

Being a serious student of aviation I knew that this would be a valuable addition to my collection. I will be very grateful if you would tell me if I may purchase a subscription to this magazine. ST. LOUIS, MO. DAVID OSTER

SIRS:

I believe you made an error in stating that a J34-WE34 (October 1954, p. 29) is from an F9F aircraft. E. J. Popp, TSgt.

Sergeant, you are so right. Our source misinformed us.

SIRS:

I thought you might take comfort in knowing that we have a seaplane fighter squadron operational here in Indo China ready and willing to take to the air at a moments notice.

With rockets, bombs and napalm hanging from jury rigged bomb racks and a machine gun protruding from the hatch, the venerable *Goose* was used throughout Indo China by French Navy pilots of the 8-S Squadron to support the river Dinassaut units, and to break up ambushes to which they were so vulnerable.

The Commandant at Cat Lai Seaplane Base, Capitaine de Corvette des Prez d la Morlais, has expressed considerable satisfaction with his "fighter squadron," and although the uneasy peace here has relegated the squadron to prosaic liaison chores, the homemade racks and ordnance are kept handy.

A. L. DOWNING, CDR.

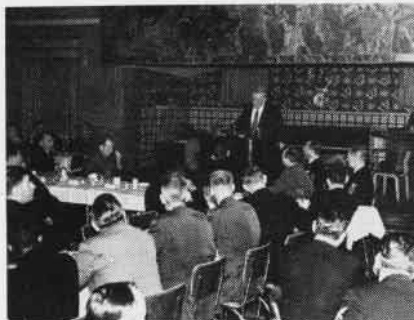
MAAG, INDO CHINA



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IFR-IQ?

According to the All Weather Flight School, the answer is True. Ref: Flight Information Manual, 1 May 1953, Vol. 7, Part I, page 55.



MGEN. L. B. Hershey, head of Selective Service, addresses second meeting of CPO Nooners' Day Club at Norfolk. Recently organized, the club stresses CPO leadership.

Rotorcycle Contract Let BuAer's One-Man Portable 'Copter

BUAER has awarded two contracts for a new prototype one-man, portable helicopter. The new machine will be known as the "Rotorcycle." The successful designs were submitted by the Gyrodyne Company of Long Island, N. Y. and Hiller Helicopter of Palo Alto, Calif. Eighteen companies submitted 30 designs for consideration.

Both Rotorcycles will be powered by a Nelson four-cylinder opposed two-cycle air-cooled engine developed by the Barmotive Products Co. of San Leandro, Calif. The Hiller one-man machine will be a two bladed rotor with a small tail rotor, and the Gyrodyne will be a coaxial contra-rotation two bladed rotor arrangement with a fixed tail stabilizer.

The portable, lightweight helicopter which is quickly assembled will be used by the Marines for observation, liaison, escape and evasion, and small unit tactical maneuvers. Both designs selected by BUAEER can be collapsed into a small package for easy transportation.

Design, construction and testing of the Rotorcycle will take about a year.

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SUBSCRIPTIONS

Naval Aviation News is available on subscription for \$2 a year through Superintendent of Documents, Government Printing Office, Washington 25, D. C.

THE COVER

P5M-2 Marlin is latest ASW seaplane to be put into operation. The first Marlins were assigned to VP-47, NAS Alameda. The hull construction permits takeoff in heavier seas with higher gross weights than previously possible.

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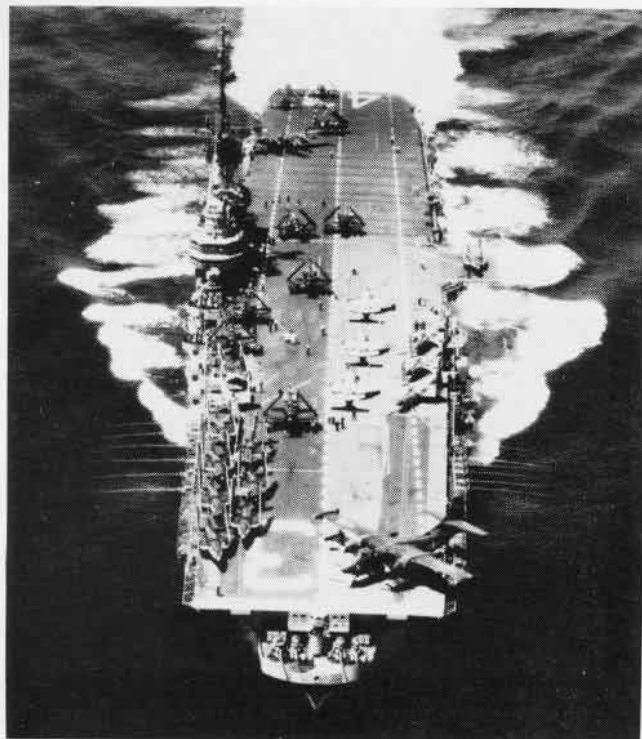
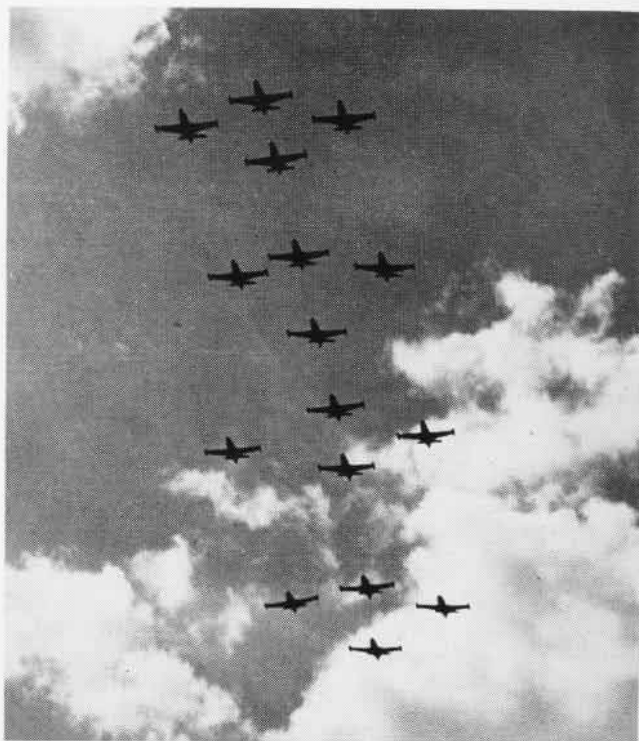
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THIS month we observe the 223rd anniversary of the birthday of George Washington, Father of our Country and first Commander-in-Chief. The small ill-equipped Continental Army led by General Washington, that fought and died to win our precious liberty is a far cry from the instruments of independence pic-

tured above. Today they roam the seas and skies to guarantee that that hard won liberty shall not again be threatened. The men who man the jets and carriers today have a common bond with their counterparts, the muzzle loaders of 180 years ago—love of God and Country, fighting spirit, and devotion to duty.



NAVIATORS' WATER BALLET

Come in and join the fun! Pilots of Composite Squadron Three imitate mermaid queens of the Water Follies as they test their exposure suits for leaks before Far East deployment. A Naval Aviator's life is exciting but, of course, the object is to stay out of the water. Naval Aviation Cadet training covers what to do until the 'copter comes, but more important, it gives young men the best flight training available in the world. Examine the record.

NAVAL AVIATION

NEWS

ASK MEN WITH GOLD WINGS